WIZ620wi User's Manual

(Version 1.1)

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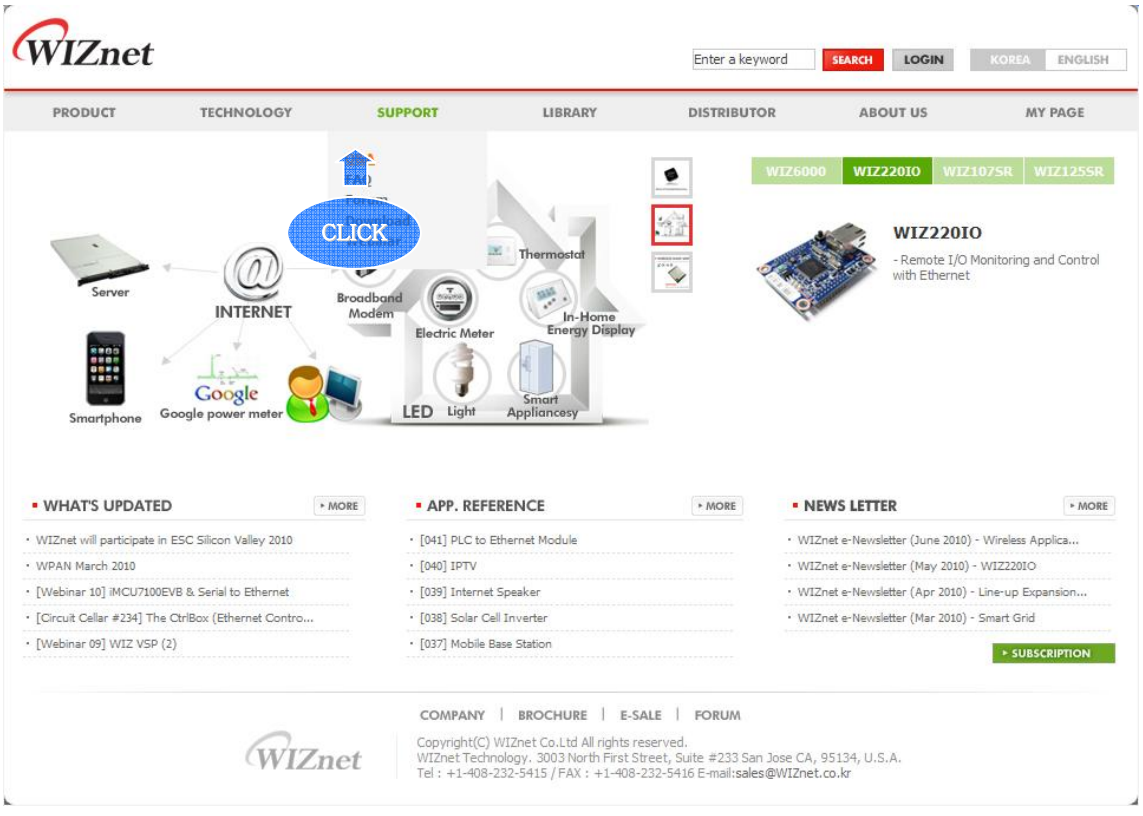
Document Revision History

Date	Revision	Changes
2010-09-10	V1.0	Official Release
2010-11-03	V1.1	Ethernet converter mode added. Power consumption data added.

On-line Technical Support

If you have something to ask about WIZnet products, write down your question on Q&A Board in WIZnet website (www.wiznet.co.kr). WIZnet will give an answer as soon as possible.



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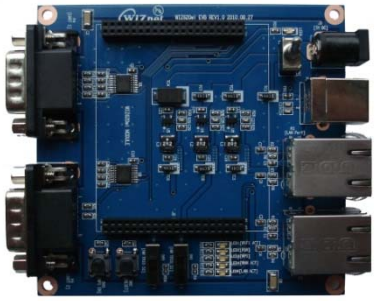
1. Introduction

WIZ620wi is the gateway module to convert RS-232 or TCP/IP protocol into the IEEE802.11b/g/n wireless protocol. By interfacing with RS-232 or MII, WIZ620wi will enable a device to connect to wireless network for remote control and management. WIZ620wi also includes embedded switch for IP sharing and supports 3G-Router through USB interface.

Main Features

- Embedded 802.11b/g/n Wireless Networking
- Support Access Point, Client, Gateway & Serial to WLAN mode
- Ethernet to Wireless Bridging
- Strong Security with 64/128 bit WEP, WPA, WPA2
- MII, UART, USB type-B, U.FL(WLAN Antenna) Interface
- Ready to use serial to wireless application
- Max 90Mbps Data Streaming
- Compact design 50mm X 60mm X 10.5mm
- RoHS Compliant

Product Contents (WIZ620wi-EVB)

	WIZ620wi Module
	WIZ620wi EVB Board
	Serial Cable
	Network Cable (Cross Cable)
	Power Adaptor (DC 5V, 2A)
	Antenna 2 Ea (2dBi PCB type + Coaxial Cable)

1.1 Specification

1.1.1 WIZ620wi Module

Wireless

Category	Description
Wireless Standard	IEEE802.11b/g/n
Frequency Range	USA: 2.400 ~ 2.483GHz Europe: 2.400 ~ 2.483GHz Japan: 2.400 ~ 2.497GHz China: 2.400 ~ 2.483GHz
Operating Channels	USA/Canada: 11(1 ~ 11) Major Europe Countries: 13(1 ~ 13) France: 4(10 ~ 13) Japan: 14 for 802.11b(1 ~ 14), 13 for 802.11g(1 ~ 13) Korea/China: 13(1 ~ 13)
Output Power (Tolerance(+/-1dBm)	802.11b: 17dBm@11Mbps 802.11g: 14dBm@54Mbps 802.11n: 14dBm@300Mbps/114.4Mbps
Receive Sensitivity	802.11b: -89dBm@11Mbps 802.11g: -74dBm@54Mbps 802.11n(40MHz): -66dBm@300Mbps 802.11n(20MHz): -70dBm@144.4Mbps
Data Rates	802.11b: 1,2,5.5,11Mbps 802.11g: 6,9,12,18,24,36,48,54Mbps 802.11n(20MHz): 14.4,28.9,43.3,57.8,86.7,115.6,130,144.4Mbps 802.11n(40MHz): 30,60,90,120,180,240,270,300Mbps
Modulation Type	11g: OFDM(64QAM, 16QAM, QPSK, BPSK) 11b: DSS(CCK, DQPSK, DBPSK)
Operation Distance	802.11b

	Outdoor: 150m@11Mbps, 300m@1Mbps Indoor: 30m@11Mbps, 100m@1Mbps 802.11g Outdoor: 50m@54Mbps, 300m@6Mbps Indoor: 30m@54Mbps, 100m@6Mbps 802.11n Outdoor: 30m@300Mbps, 250m@6.5Mbps Indoor: 20m@300mbps, 100m@6.5Mbps
Antenna	2T-2R

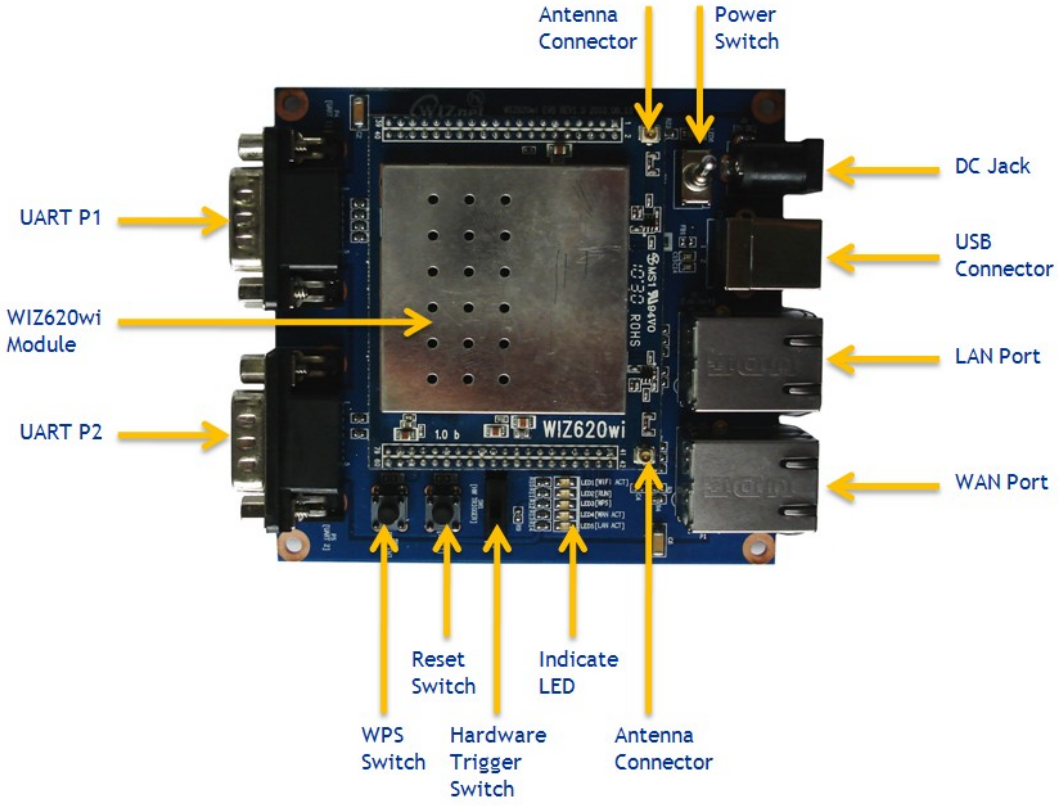
Hardware

Category	Description
Interface	MII, UART, USB, LAN, Power, 2.00mm Pitch Header Pin
	U.FL(wireless antenna connector)
Temperature	Operation: -5℃~55℃ Storage: -20℃~70℃
Humidity	Operation: 10% to 90%, Non-Condensing Storage: 5% to 90%, Non-Condensing
Serial	Baud Rate : 1200 ~ 921,600bps
	Stop bits: 1, 2
	Parity: None, Odd, Even
	Flow Control UART1 : XON/XOFF(software), CTS/RTS(hardware), none UART2 : XON/XOFF
Dimension	50mm X 60mm X 10.5mm
Power consumption	Under 2.3W (Max)

Software

Category	Description
Operation Mode	Access Point, Clinet, Gateway, Serial to Wireless LAN
Protocol	ARP, UDP, TCP, Telnet, ICMP, DHCP, PPPoE, BOOTP, HTTP, SMTP, TFTP
Security	WEP 64/128bit WPA/WPA2 PSK/AES/TKIP 802.1x(Radius)
Management	HTTP, Telnet, Serial, UDP
Notification	Event Logging

1.1.2 WIZ620wi EVB Board Interface



2. Getting Started

2.1 Hardware Installation

For the testing, we need WIZ620wi module and EVB board.

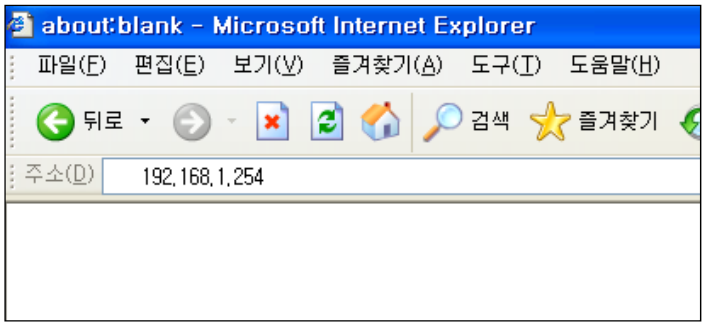
- **STEP1:** Plug a WIZ620wi module into the socket of EVB board
- **STEP2:** Connect the LAN Port(RJ-45 connector) of the EVB and Hub (or PC) using LAN Cable.
- **STEP3:** Connect the Serial port(DB9 connector) of the EVB and serial device using RS-232 cable.
- **STEP4:** Supply the power to EVB board using 5V DC power adaptor
- **STEP5:** Configure the network parameters of WIZ620wi and PC

  - The default IP address of WIZ620wi is "192.168.1.254". According to this value, set the IP address of the PC as "192.168.1.xxx"

  - Wireless connection is also supported. The default SSID of WIZ620wi is 'WIZ620wi'

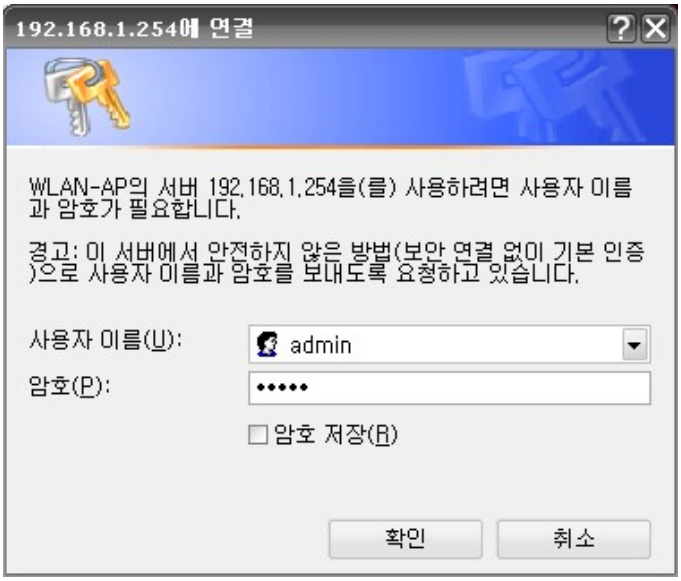
2.2 Web Configuration Page Connection

1) Open the web browser and input the default IP address of WIZ620wi "192.168.1.254".

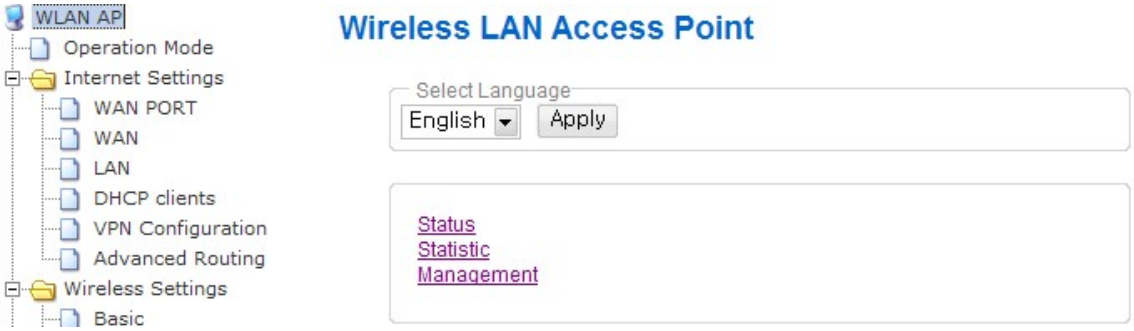


2) You can see the window for user ID and Password.

(Default ID : admin / Default Password : admin)



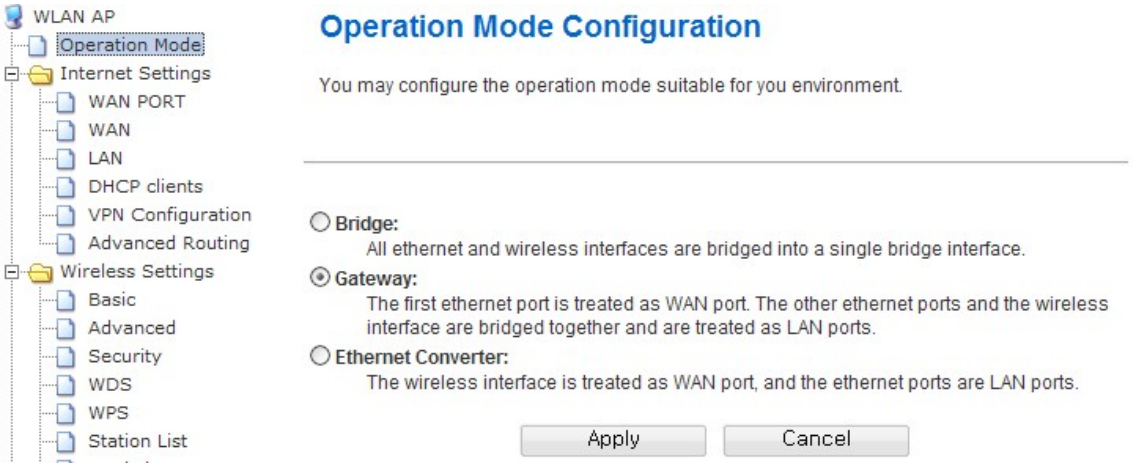
3) The default page is as below.



3. Web Configuration Page Description

3.1 Operation Mode

-. WIZ620wi supports Bridge, Gateway and Ethernet converter modes.
The default mode is set as Gateway mode.



-. Bridge mode binds all Ethernet ports and wireless interface in a bridge.

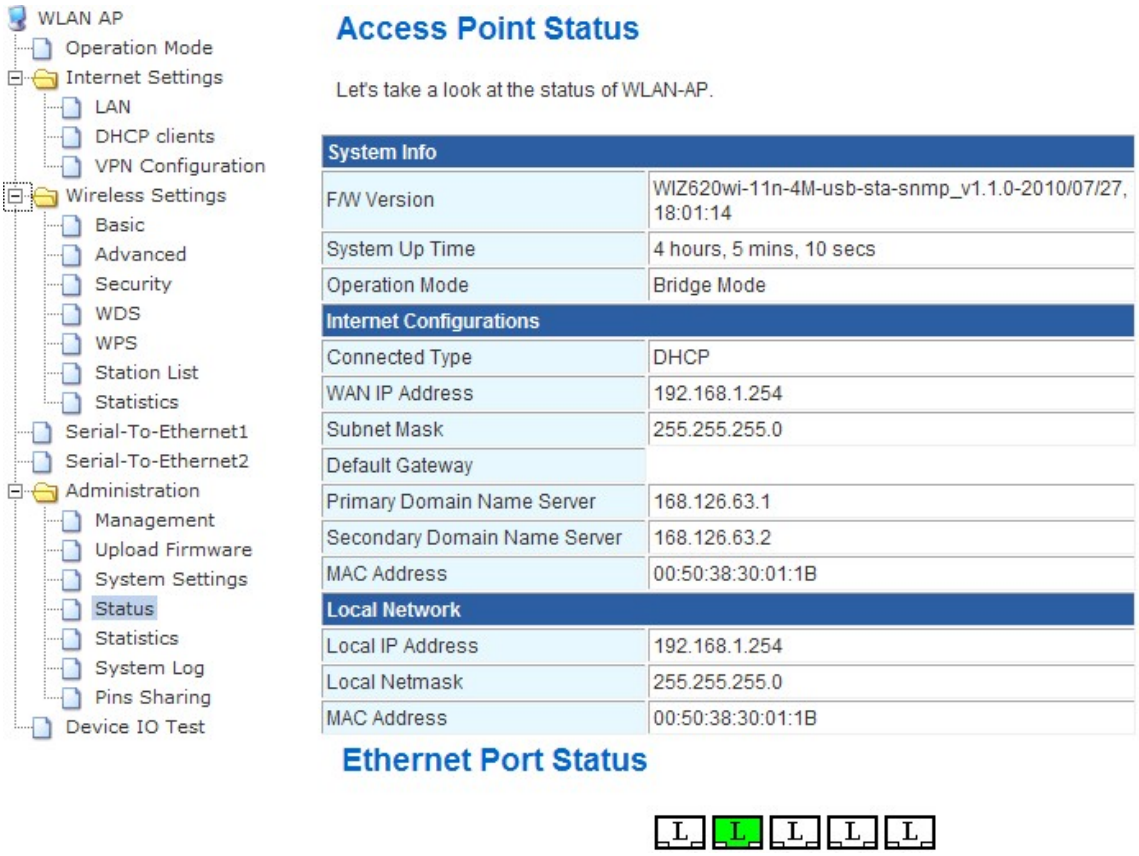
-. In the Gateway mode, Ethernet port #0 is set as WAN port. Other Ethernet ports and Wireless interface are used for LAN ports. WAN port means the port for Internet connection with the cable provided by ISP

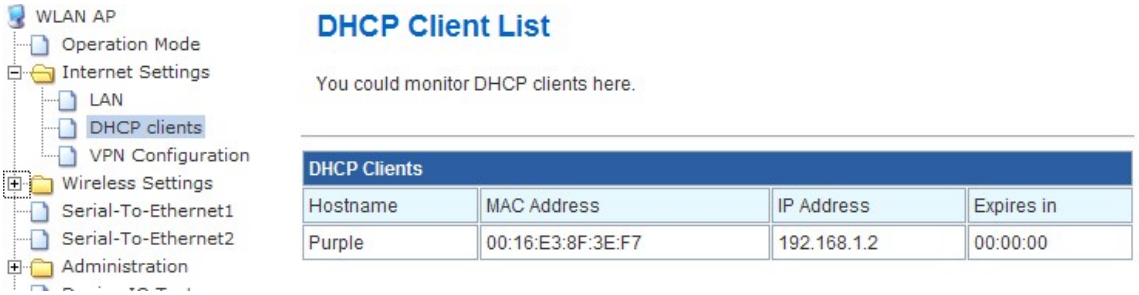
-. In the Ethernet Converter mode, Wireless interface is set as WAN port. All Ethernet ports are used for LAN port. For the Internet connection, you need an AP provided by ISP.

3.2 Network Management

3.2.1 Network Connection Information

-. You can check network information configured for WIZ620wi, and PC information connected to WIZ620wi.



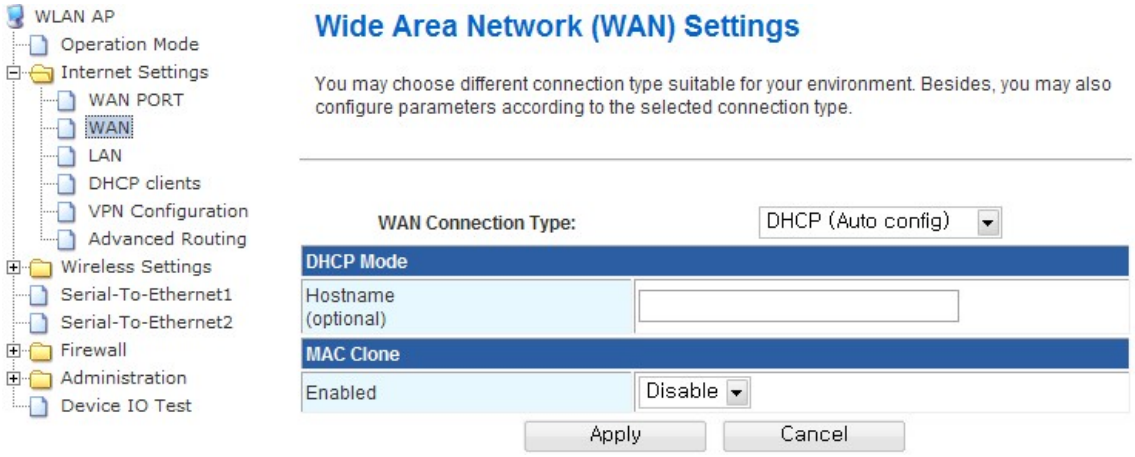


3.2.2 Internet Connection Configuration

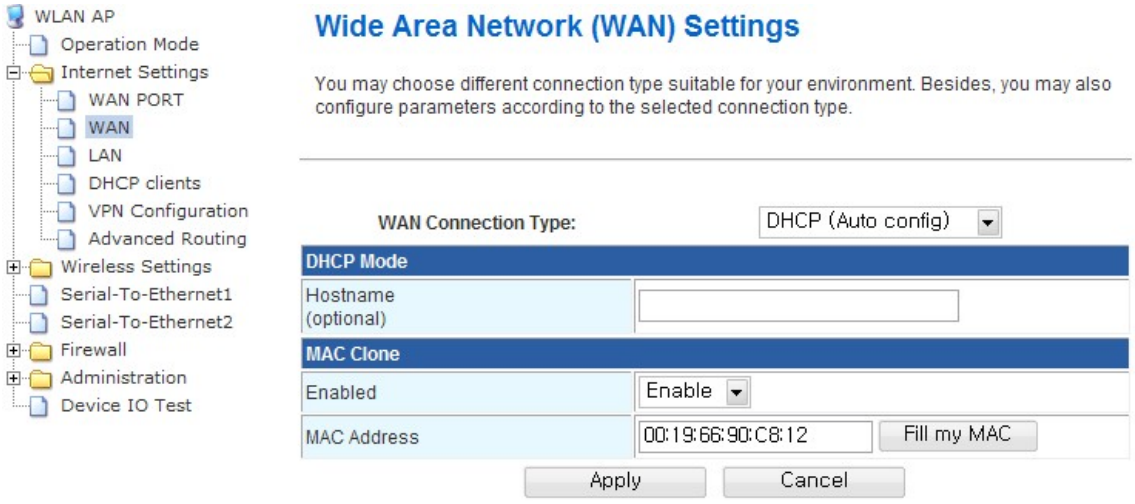
-. You can select the IP configuration method.

3.2.2.1 Dynamic IP Configuration

-. In some areas, the dynamic IP service is restricted to the registered MAC addresses. In this case, you have to input the MAC address that is available of Internet connection into the WIZ620wi.



-. MAC Clone function is used if service is restricted to the registered MAC address.
If you enable MAC Clone, you can manually input the MAC address. If you click "Fill My MAC", the hardware address of the PC is automatically copied.



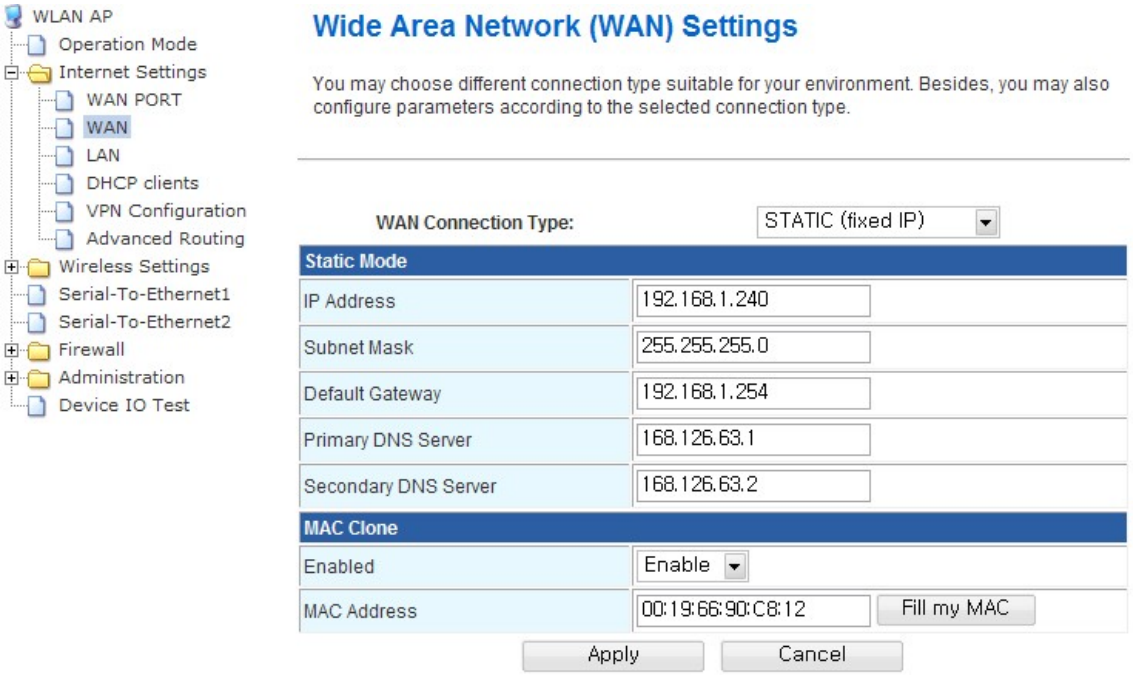
-. The Procedure of WAN Configuration using Dynamic IP address

1) Select "DHCP (Auto Config)" for WAN connection type.

2) If necessary, input the hardware address using "MAC Clone" function.

3) Click "Apply" button

3.2.2.2 Static IP Configuration



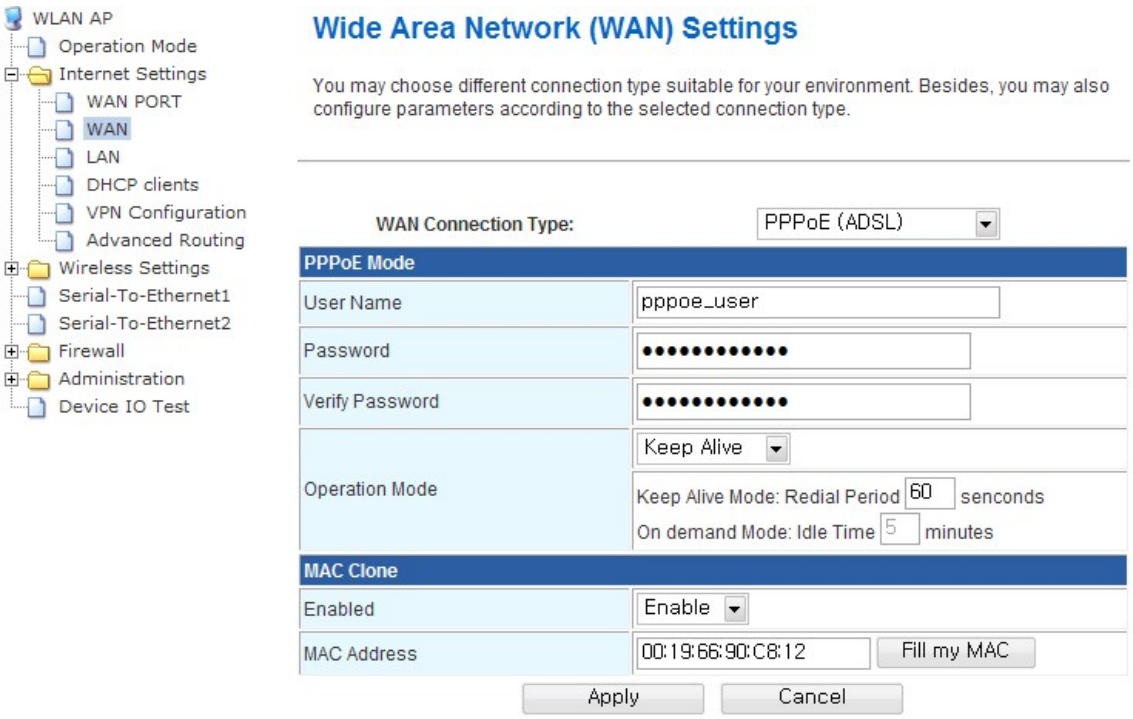
-. The Procedure of WAN Configuration using Static IP address

1) Select "STATIC (Fixed IP) for WAN connection type.

2) Input IP address, Subnet Mask, Gateway and DNS.

3) Click "Apply" button.

3.2.2.3 PPPoE Configuration



-. User Name: Input user account.

-. Password: Input password.

-. Operation Mode: It is about re-connection method when connection is closed.

-. The Procedure of WAN configuration using PPPoE

1) Select "PPPoE (ADSL)" for WAN connection type.

2) Input User account and password.

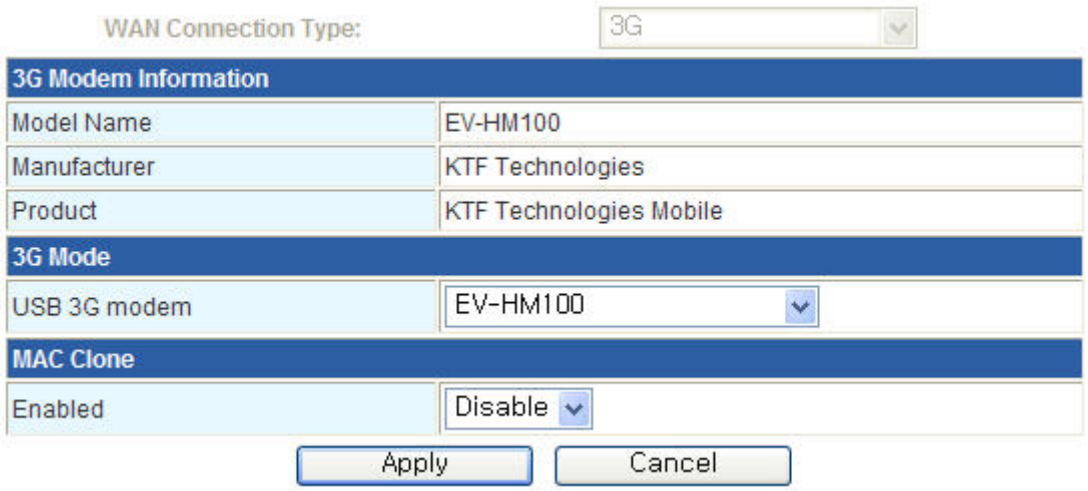
3) Click "Apply" button.

3.2.2.4 3G Configuration

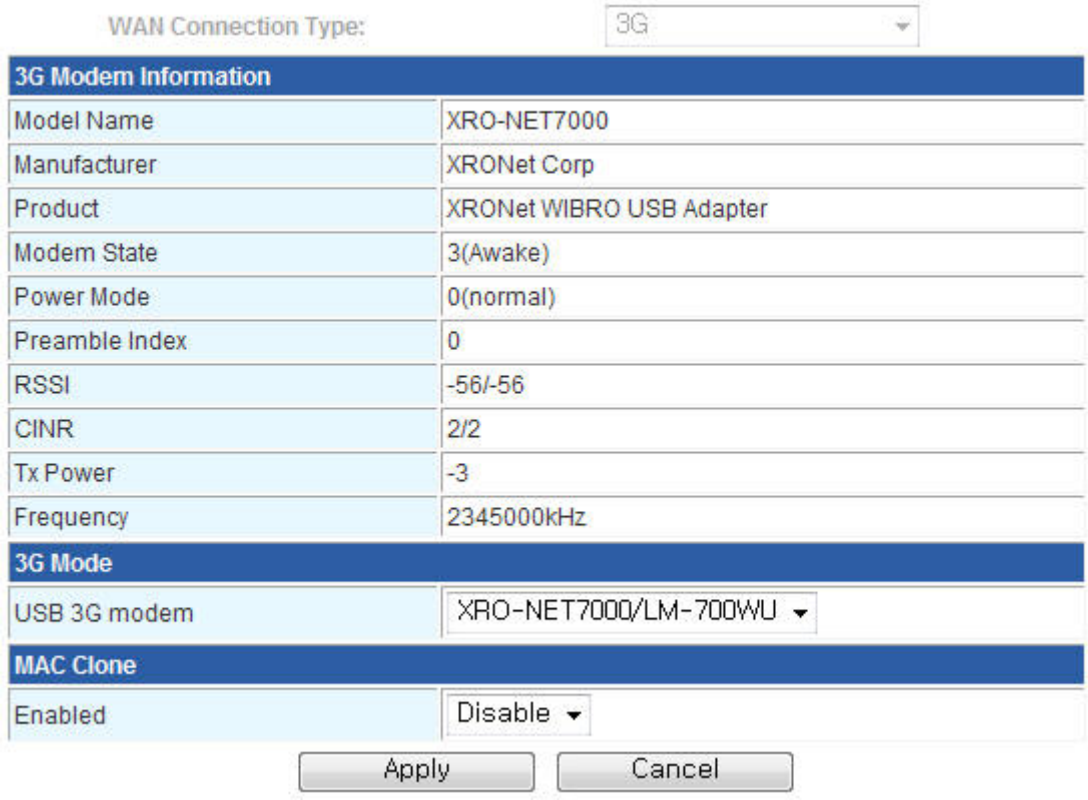
-. This mode is available at the 3G-Router.

-. This mode is used for Internet service using HSDPA or WiBro modem.

-. Below figure shows when the EV-HM100 (KT) is installed.



-. Below figure shows when the modem of Xronet chip is installed (including LM-700WU)



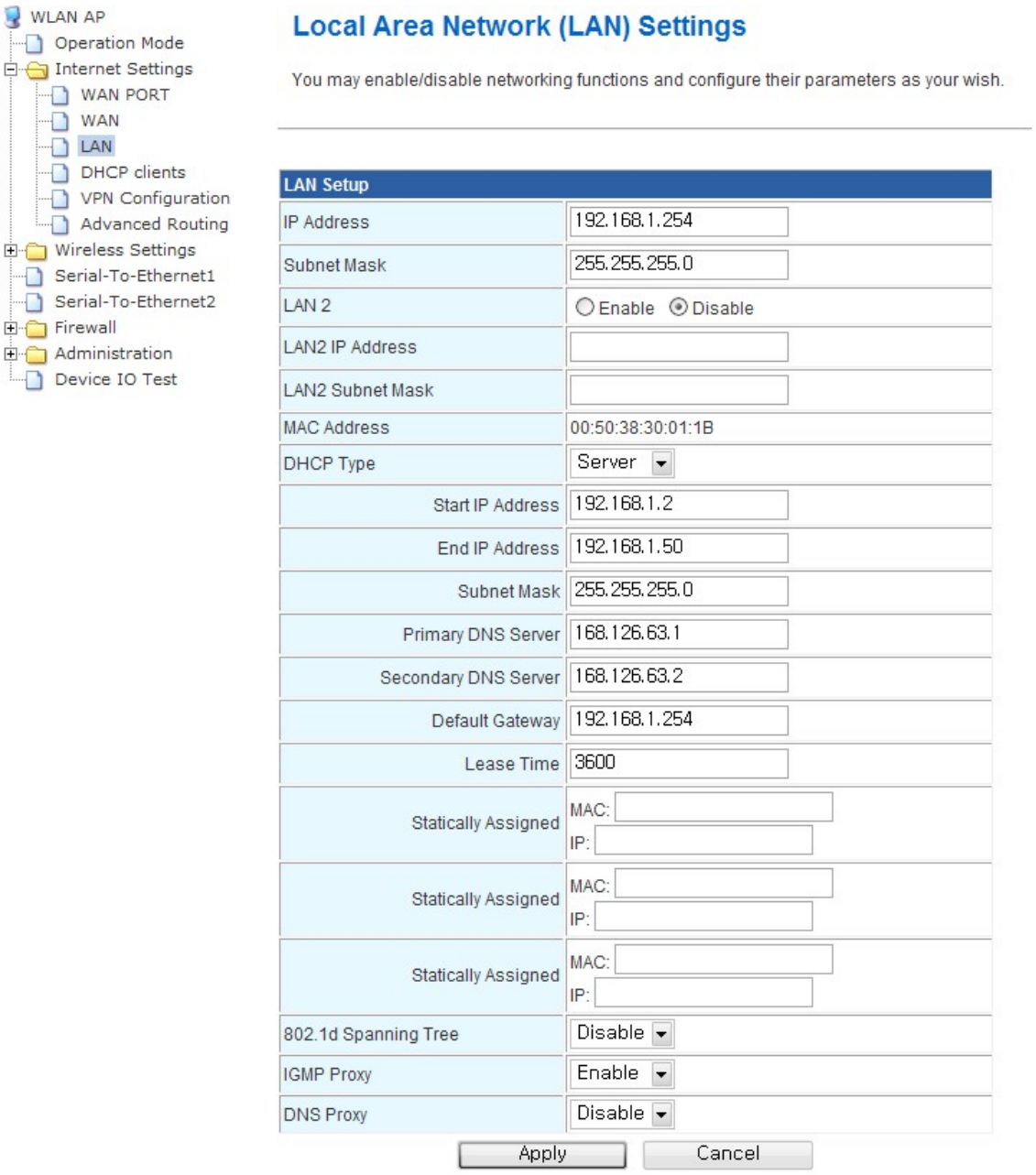
-. Currently supported 3G modems are EV-HM100 (KT Ever), SPH-H1300 (Samsung), LM-700WU (LG Innotek), CHU-629K, CWE-624K (C-Motech) and the modems using Xronet chip.

-. The Procedure of WAN configuration using 3G

1) Select "3G" for WAN connection type.
2) Selecta a modem at the 3G Mode.
3) Click "Apply" button.

3.2.3 Network configuration

-. You can configure WIZ620wi's internal IP address, DHCP server and manual IP assignment of DHCP server.



-. The default IP address of WIZ620wi is "192.168.1.254". If you change the IP address, the changed one is applied without rebooting the module. You can connect to the web with changed IP address.

-. You can turn on or off the DHCP server. If you turn off the DHCP server, WIZ620wi does not assign the IP address to the PC. In order to assign the IP address automatically, you have to run the DHCP server. If not, you need to manually assign the IP address to the PC.

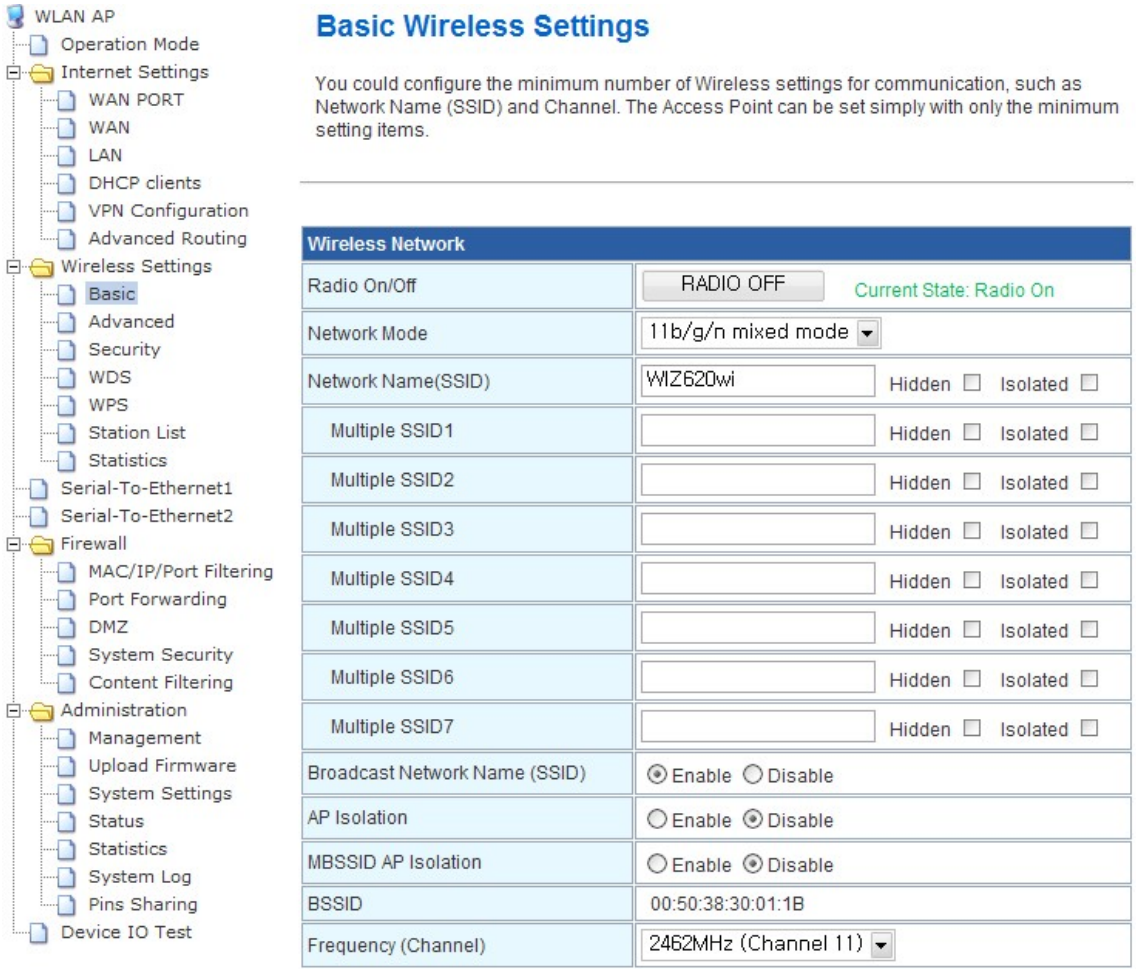
3.3 Wireless Management

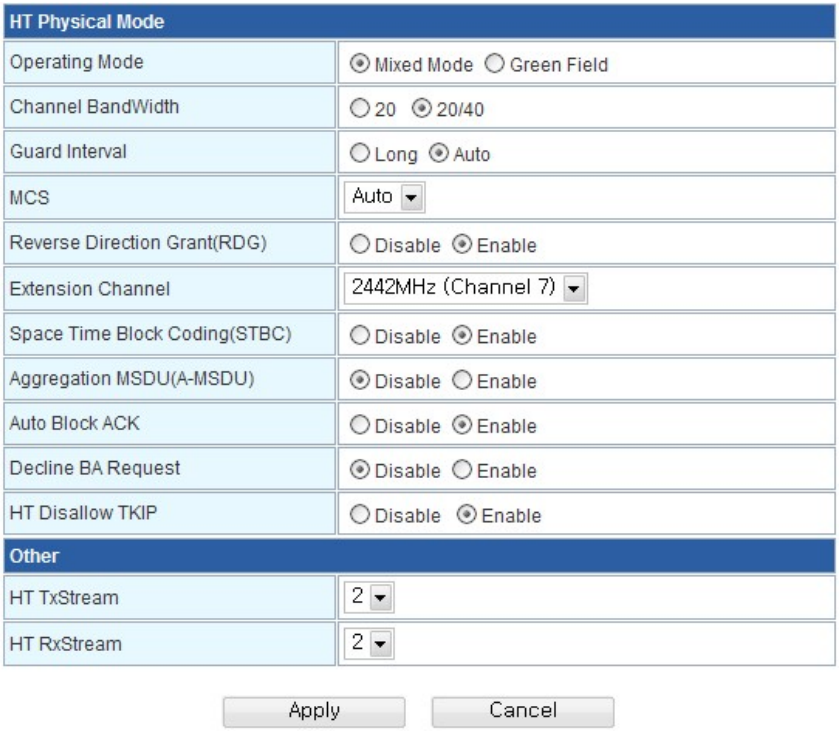
3.3.1 Wireless Configuration

-. The default mode is the AP mode. Wireless WAN mode can be used after configuring "Ethernet Converter" at the Operation Mode.

3.3.1.1 AP Mode Configuration

-. At the AP mode, PC or lab top can be connected for the Internet.





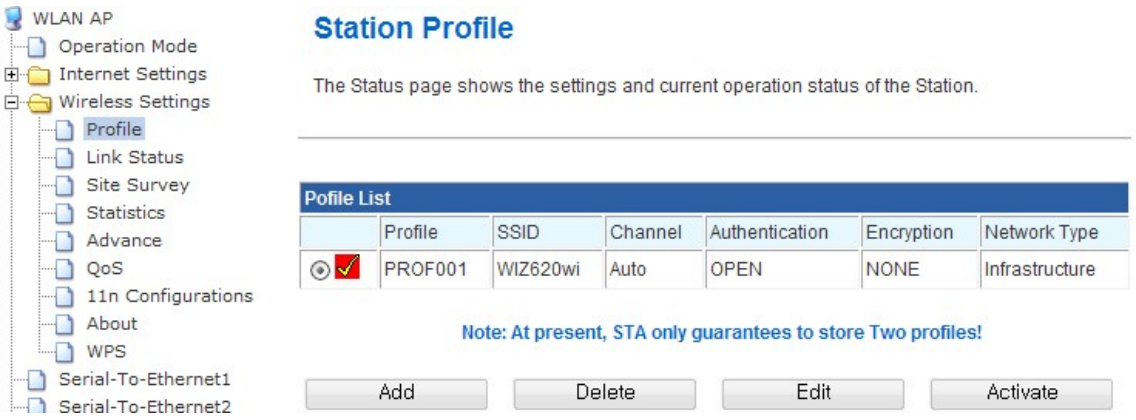
-. Basic configuration menu in AP Mode

Category	Description
Radio On/Off	Turn on or off Wireless AP function
Network Mode	11b/g/n mixed mode: Supporting 802.11b/g/n 11b/g mixed mode: Supporting 802.11b/g 11b only: Supporting 802.11b 11g only: Supporting 802.11g 11n only: Supporting 802.11n
SSID	Input the name of wireless network
Channel	Select a channel for wireless network
Broadcast Network Name	This function notifies the SSID to the wireless devices. If this function is disabled, the AP is not detected at the wireless device.
Channel Bandwidth	20MHz: Fix the channel bandwidth as 20MHz 20/40MHz: When a wireless station supporting 11n channel bonding is connected, 40MHz bandwidth is used.
RDG	Reverse Direct Grant / It can improve the wireless performance using RDG technology of 11n.

3.3.1.2 Wireless WAN Mode Configuration

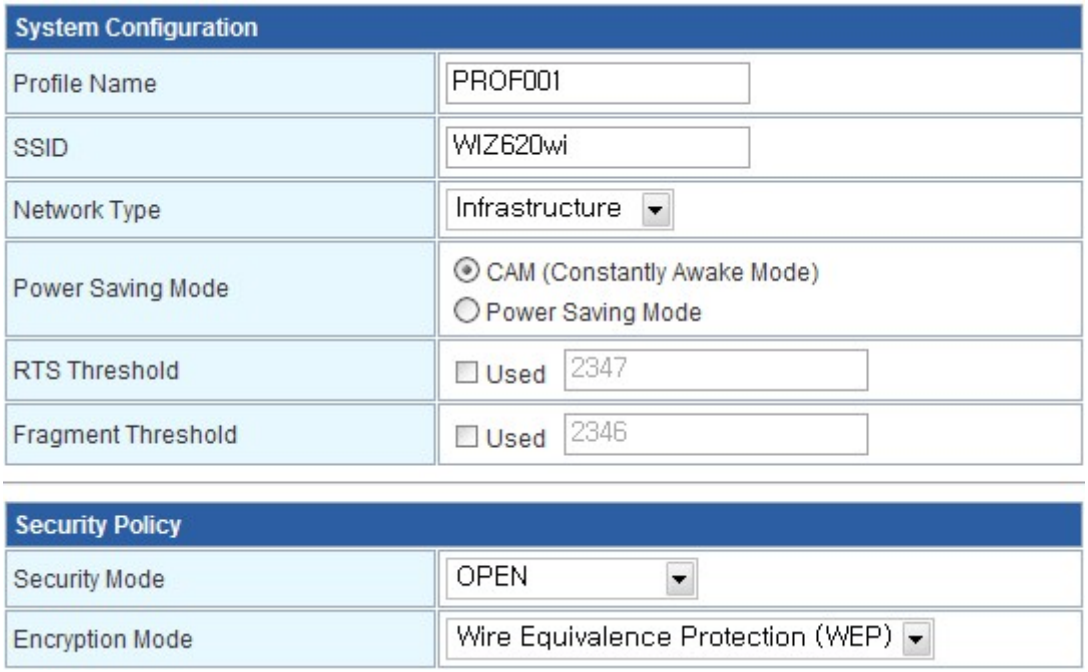
-. At the Wireless WAN mode, WIZ620wi connects to another AP and operates as WAN port. In this mode, the wired WAN port is not used.

-. In this mode, WIZ620wi does not operate as wireless AP.



-. If you click "Edit" button of the 'Station Profile setting page' then another setting page is appeared.

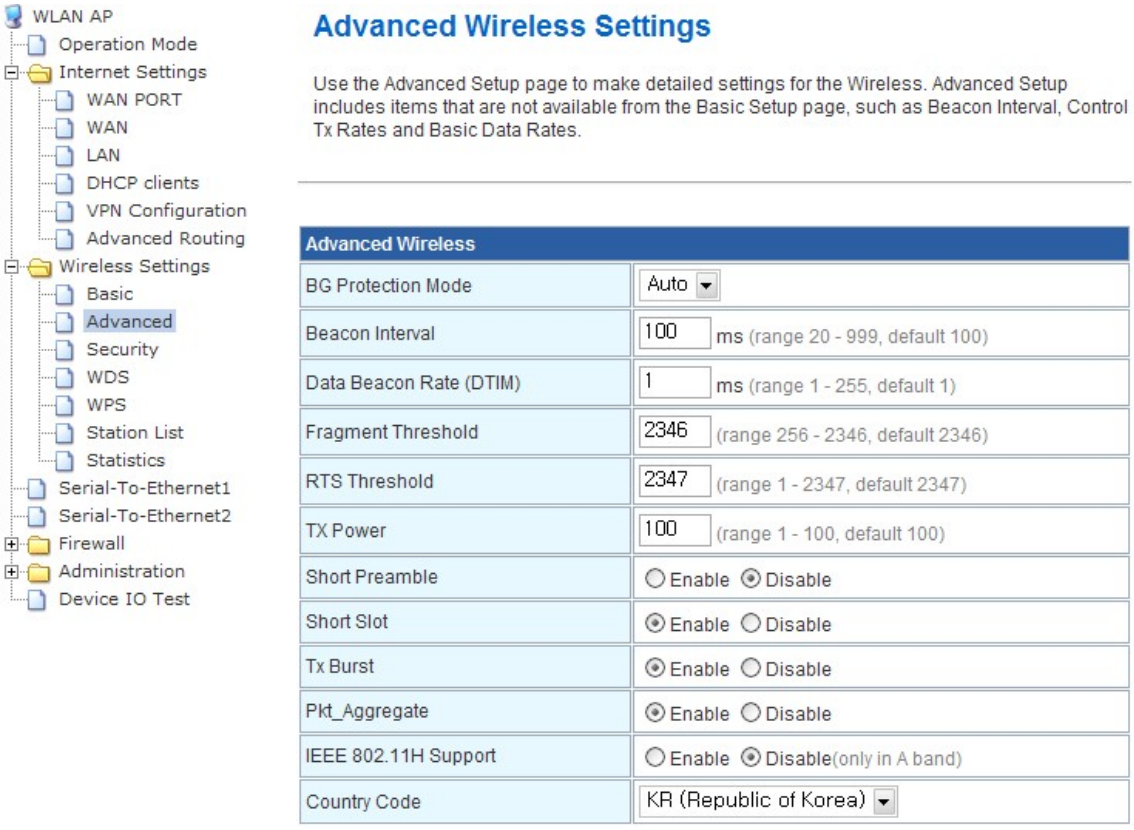
-. After checking the AP to be connected, input the related information (SSID,Authentication).



Wire Equivalence Protection (WEP)		
WEP Key Length	64 bit (10 hex digits/ 5 ascii keys)	
WEP Key Entry Method		Hexadecimal
WEP Keys	WEP Key 1 :	
	WEP Key 2 :	
	WEP Key 3 :	
	WEP Key 4 :	
Default Key		Key 1

Apply Cancel

3.3.2 Advanced Wireless Configuration



Category	Description
BG Protection	It needs to be configured for smooth wireless connection, when using 11b and 11g LAN cards. 'Auto' configuration is recommended.
Beacon Interval	You can configure the period that Beacon is transmitted. 100ms is normally used. The range of configuration is 20 ~ 999.
Fragmentation Threshold	When the data longer than configured size is transmitted, it divides the data into the configured size. If you configure smaller value, the wireless communication is more stable, but the maximum speed is decreased. If there are a lot of interferences from other signals, configure the smaller value for better communication. The range of the configuration value is '256 ~ 2346'
RTS Threshold	When the data longer than configured size is transmitted, the data is sent in the RTS/CTS method. If you configure smaller value, the wireless communication is more stable, but the maximum speed is decreased. If there are a lot of wireless stations to be connected simultaneously, configure the smaller value for better communication. The range of configuration value is "1 ~ 2347".
Tx Power	By changing transmission power, it is possible to control the range of wireless wave. If you configure higher value, the range is more extended.
Short Preamble	If Short Preamble is configured, the performance can be improved, but the compatibility with some wireless LAN cards can't be guaranteed. For the compatibility, use the Long Preamble mode.
Short Slot	Short Slot function can improved the performance of wireless station connected through 11g mode.
Tx Burst	Tx Burst function can maximize the wireless performance. If there are a lot of wireless stations to be connected simultaneously, turn off this function for the stable wireless communication.

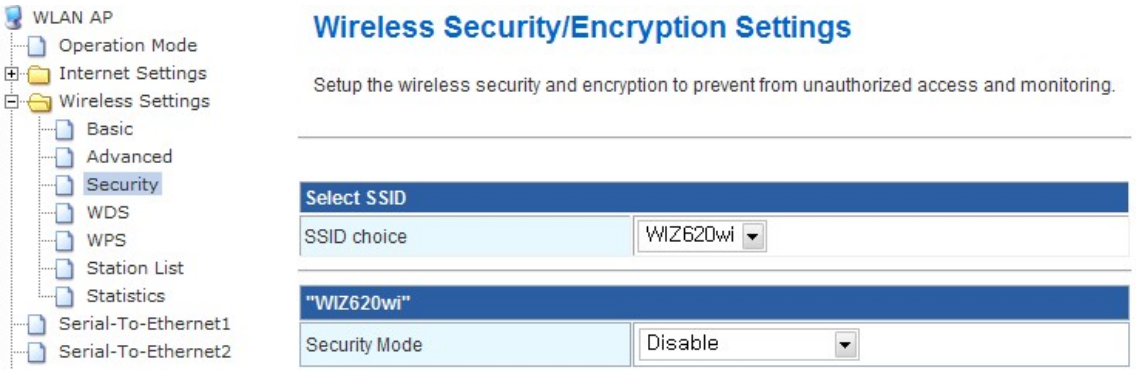
3.3.3 Wireless Security

-. By using Wireless Security function, you can protect the wireless network from the external attack.

-. To configure the wireless security, following the below steps.

1) Select a SSID.

-. Wireless security can be configured differently for each SSID.



2) Select the authentication method

Method	Description
OPEN	Allow all users to connect
SHARED	Allow the user having exact network key to connect
WEPAUTO	Automatically select OPEN/SHARED Mode
WPA-PSK	WPA-PSK is the WPA standard that the security is strengthened at the SHARED mode.
WPA2-PSK	WPA2-PSK is the advanced WPA standard.
WPAPSKWPA2PSK	It simultaneously supports WPA-PSK and WPA2-PSK.
WPA	WPA standard including 802.1x at the SHARED mode.
WPA2	WPA2 is the advanced WPA standard
WPA1WPA2	It simultaneously supports WPA and WPA2
802.1x	Radius Authentication through WEP Key

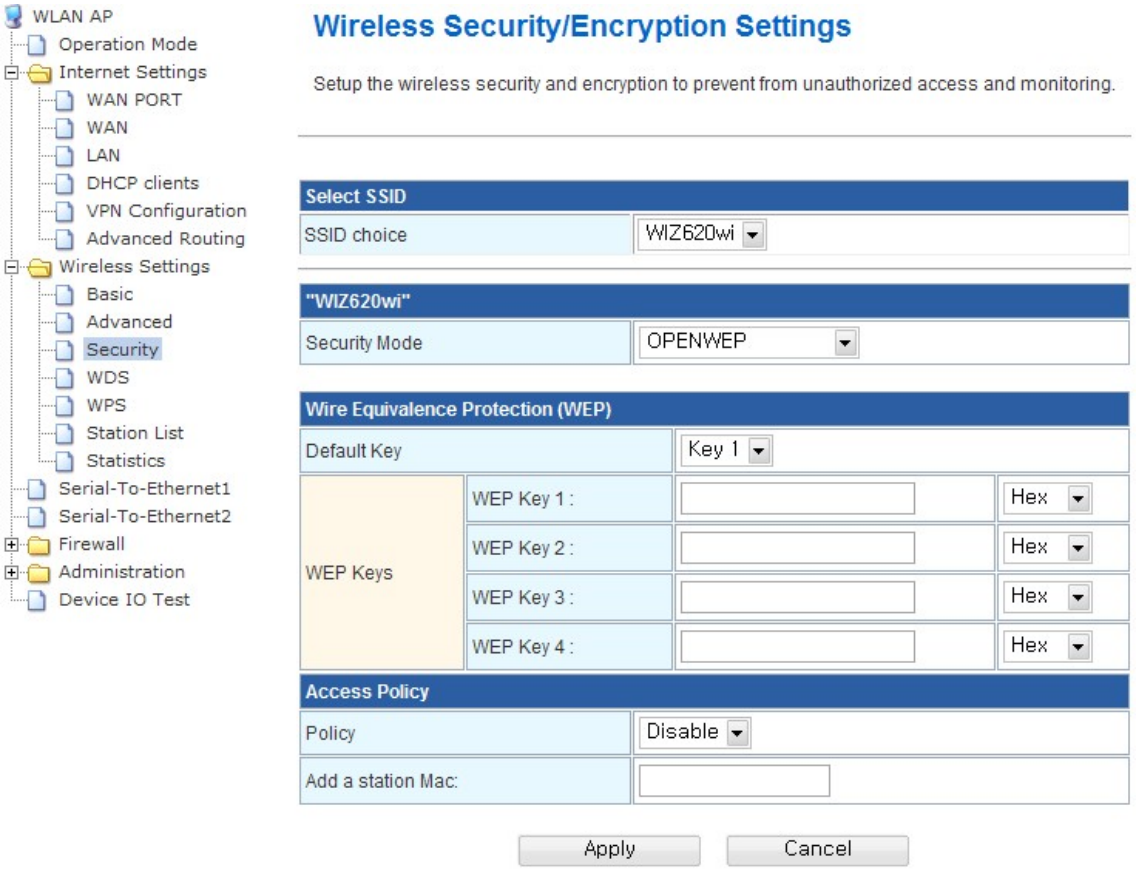
3) Select the encryption method

Encryption	Method	Description
No Use	OPEN/WEPAUTO	No use of Encryption
WEP64	SHARED/WEPAUTO/802.1x	WEP encryption using 64bit key

WEP128		WEP encryption using 128bit key
TKIP	WPA/WPA2/WPA-PSK/ WPA-PSK2/WPA1WPA2/ WPAPSKWPA2PSK	Security is more strengthened rather than WEP
AES		New Encryption with strengthened security
TKIP/AES		Simultaneously Support TKIP/AES

4) Network Key Input

-. Example of WEP64 or WEP128 Network Key Input



-. You can select the characters or hexadecimal for key input.

-. Select the default key.

-. Input the value for the key

-. The input value is required for wireless connection.

-. Example of TKIP/AES Network Key Input

WPA	
WPA Algorithms	○ TKIP ○ AES ○ TKIPAES
Pass Phrase	12345678
Key Renewal Interval	3600 seconds

-. Input network key with the 8~63 characters.

-. Example of network key input including 802.1x

WPA	
WPA Algorithms	○ TKIP ○ AES ◉ TKIPAES
Key Renewal Interval	3600 seconds

Radius Server	
IP Address	
Port	1812
Shared Secret	
Session Timeout	0
Idle Timeout	

-. Input the value for operation with Radius Server.

-. The value relate to Radius Server is provided by Internet service company.

3.3.4 Multi Wireless Network

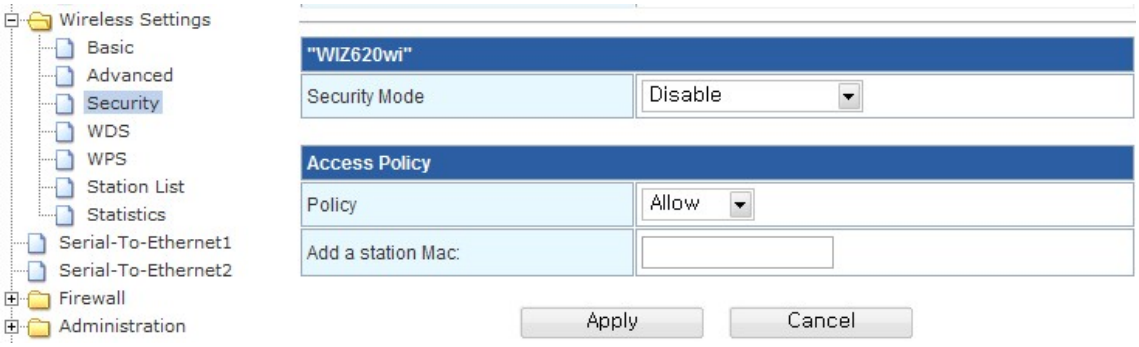
-. If you use multi wireless network, multiple wireless networks can configured using one AP.

-. WIZ620wi supports 7 wireless networks.

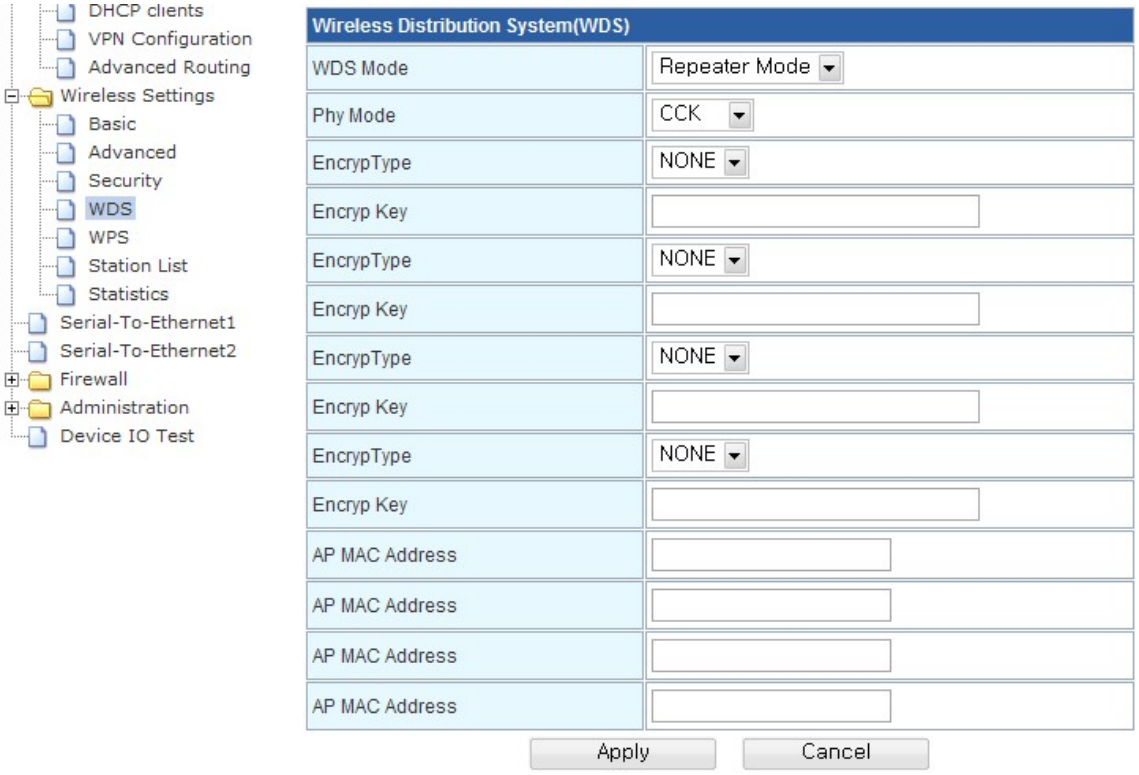
-. All wireless networks operate independently. Authentication and Encryption can be configured differently.

3.3.5 MAC Address Authentication

-. By using MAC address authentication, you can allow all, allow only registered addresses or block the registered addresses.



3.3.6 WDS Configuration



-. WDS (Wireless Distribution System) will enable WIZ620wi to be connected to another AP having WDS function. In order to connect two APs through WDS, both of them should

use the same channel, authentication and encryption.

-. WIZ620wi support below

1) Lazy Mode: In this mode, the automatic connection is supported without inputting MAC address of the other AP. It also has the function for AP.

2) Bridge Mode: As this mode does not support the function for AP, stations can't be connected to WIZ620wi.

3) Repeater Mode: This mode includes the function for AP.

-. There can be the problem of compatibility with some devices because of different implementation of WDS.

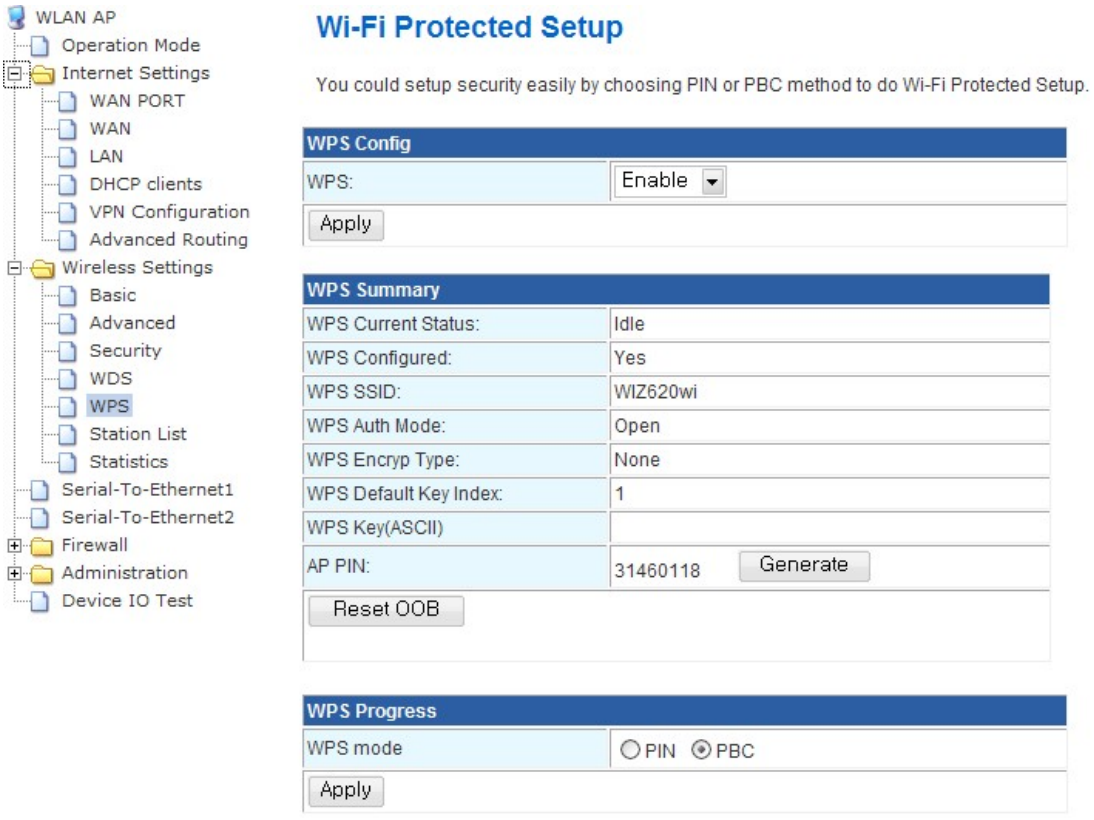
-. One WIZ620wi can be connected to maximum 4 APs through WDS.

3.3.7 WPS Configuration

-. WPS will support easy configuration of wireless network.

-. Enable the WPS to use the function.

-. WPS configuration can be done as below.



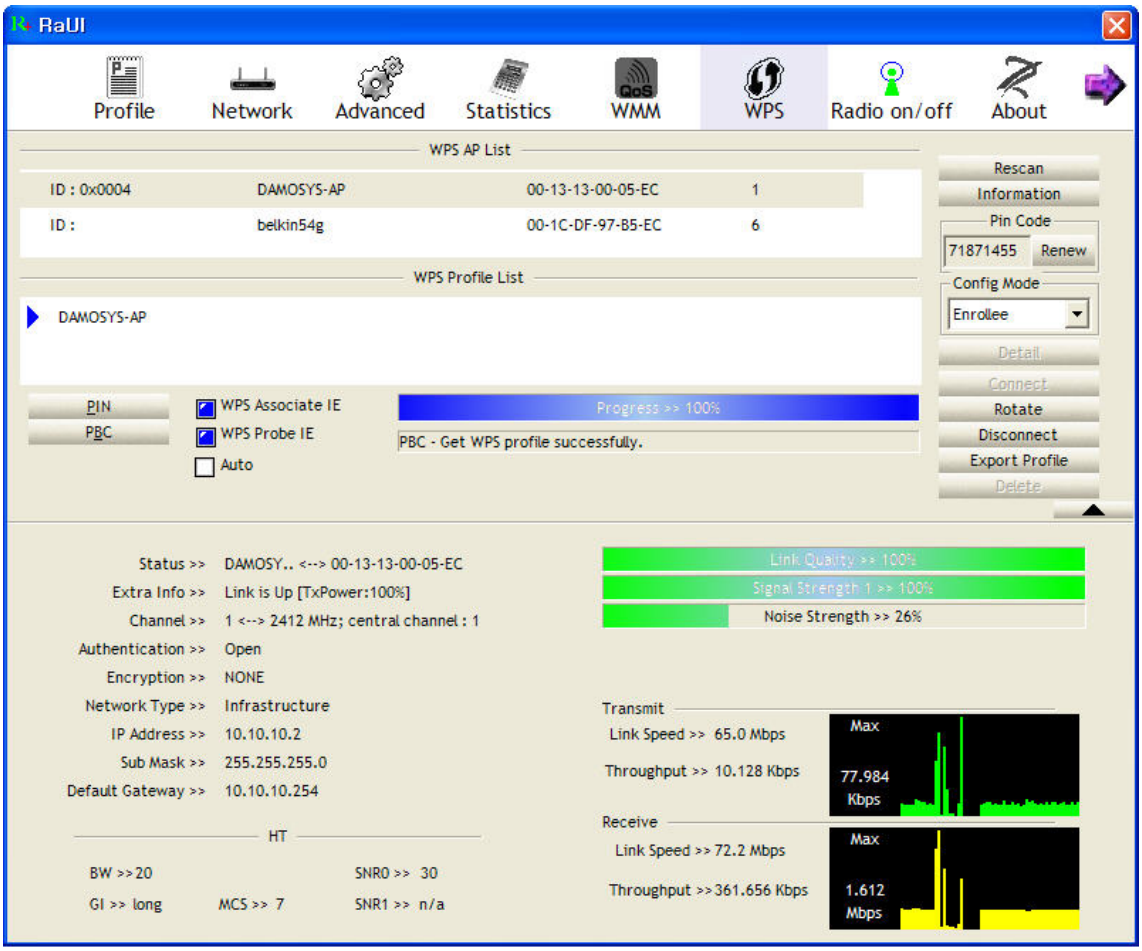
1) Configuring WPS of WIZ620wi

-. After selecting PBC of WPS mode, check if WPS LED blinks. WIZ620wil will be entering into WPS configuration mode for 2 minutes.

2) Configuring WPS of Wireless LAN card

-. Select the PBC of WPS in the Wireless LAN card. If the LAN card does not provide the WPS button, click the virtual button in the utility provided by manufacturer of the wireless LAN card.

-. If you see the 100% for the status, the configuration is finished.



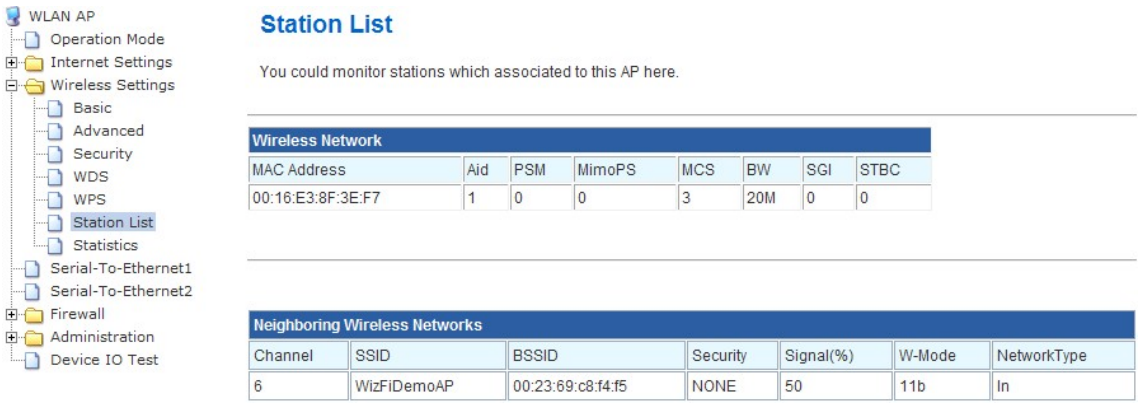
3) Check if you can connect to Internet

-. When configuring through WPS, all mode for the highest security is automatically configuration.

3.3.8 Wireless Network Status

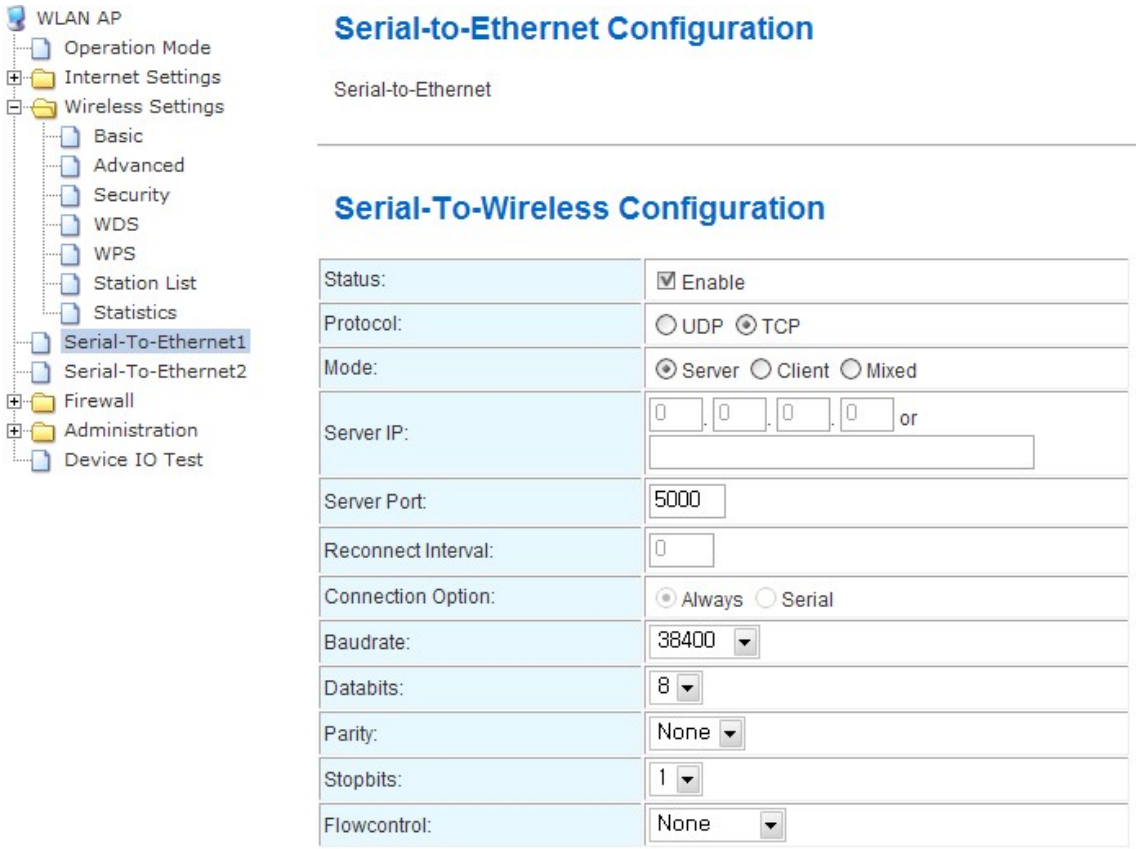
-. You can check the status of the stations which are connected to WIZ620wi.

-. You can also check the status of AP around the WIZ620wi.



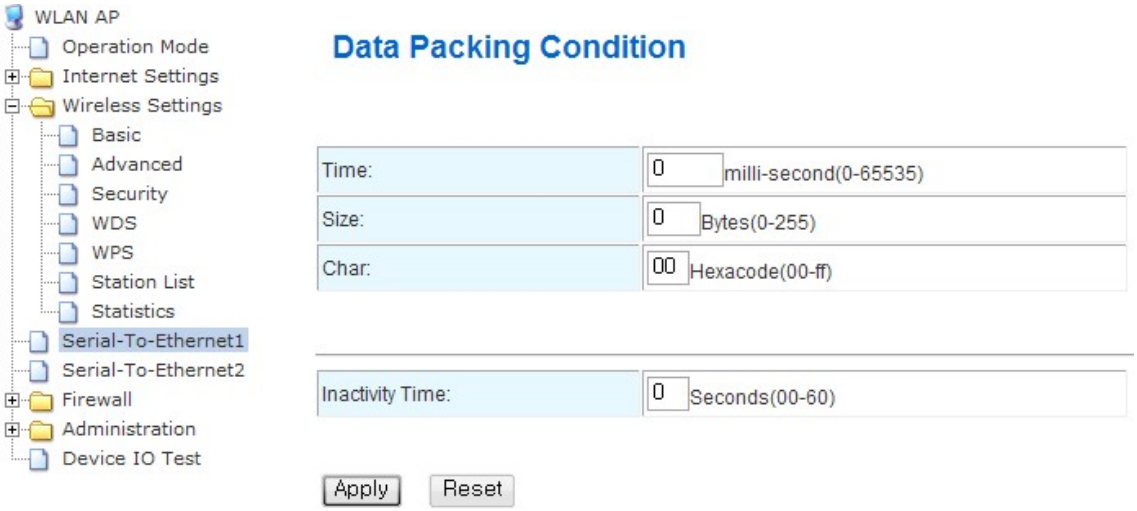
3.4 Serial to Wireless LAN (or Ethernet)

-. WIZ620wi can transmit or receive the serial data through TCP/IP.



Menu	Description
Status	Enable or Disable the function
Protocol	Configure the Protocol (TCP or UDP)
Mode	Select a Mode (Server, Client, Mixed) -. Server Mode: WIZ620wi operates as a server in the process of connection establishment. It waits for the connection trial from the client through the specified port. -. Client Mode: In this mode, WIZ620wi tries to connect to the server IP and port. -. Mixed Mode: It supports server and client mode simultaneously. It basically operates as server mode, and changes to client mode when there is any data transmitted from serial.
Server IP	Configure Server IP or Domain name to which serial data is transmitted
Server Port	Configure the server's port number
Reconnect Interval	Configure the re-connection interval
Baud rate	Configure serial communication speed (1200 ~ 921600)
Data bits	Configure serial communication bit (5 ~ 8)
Parity	Configure parity checking method (None, Odd, Even)
Stop bits	Configure stop bit (1, 2)
Flow control	Configure the flow control (None, Xon/Xoff, RTS/CTS)

-. Serial data can be transmitted to the server by defining the delimiter of time, size and char.

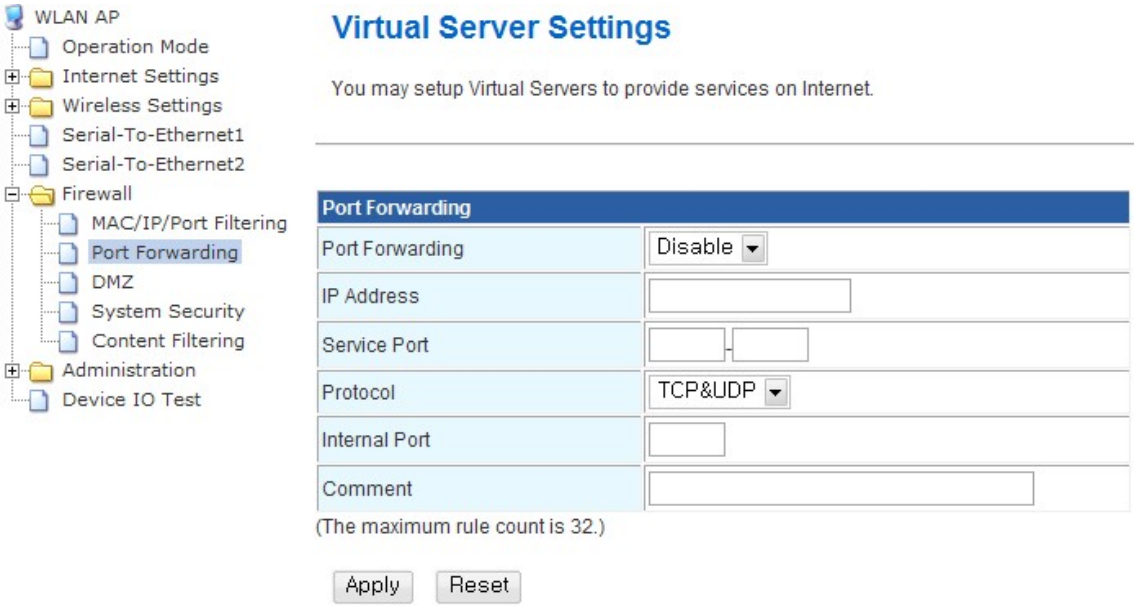


Menu	Description
Time	Transmit the serial data to the server after collecting for the configured time.
Size	Transmit the serial data to the server when the data size reaches configured size.
Char	Transmit the data when the data with configured character is transmitted.
Inactivity Time	If there is no data during Inactivity time, TCP/IP connection is closed.

3.5 NAT / Router Management

3.5.1 Port Forwarding Configuration

-. Port forwarding allows remote computers (or public machines on the Internet) to connect to a specific computer within a private local area network.



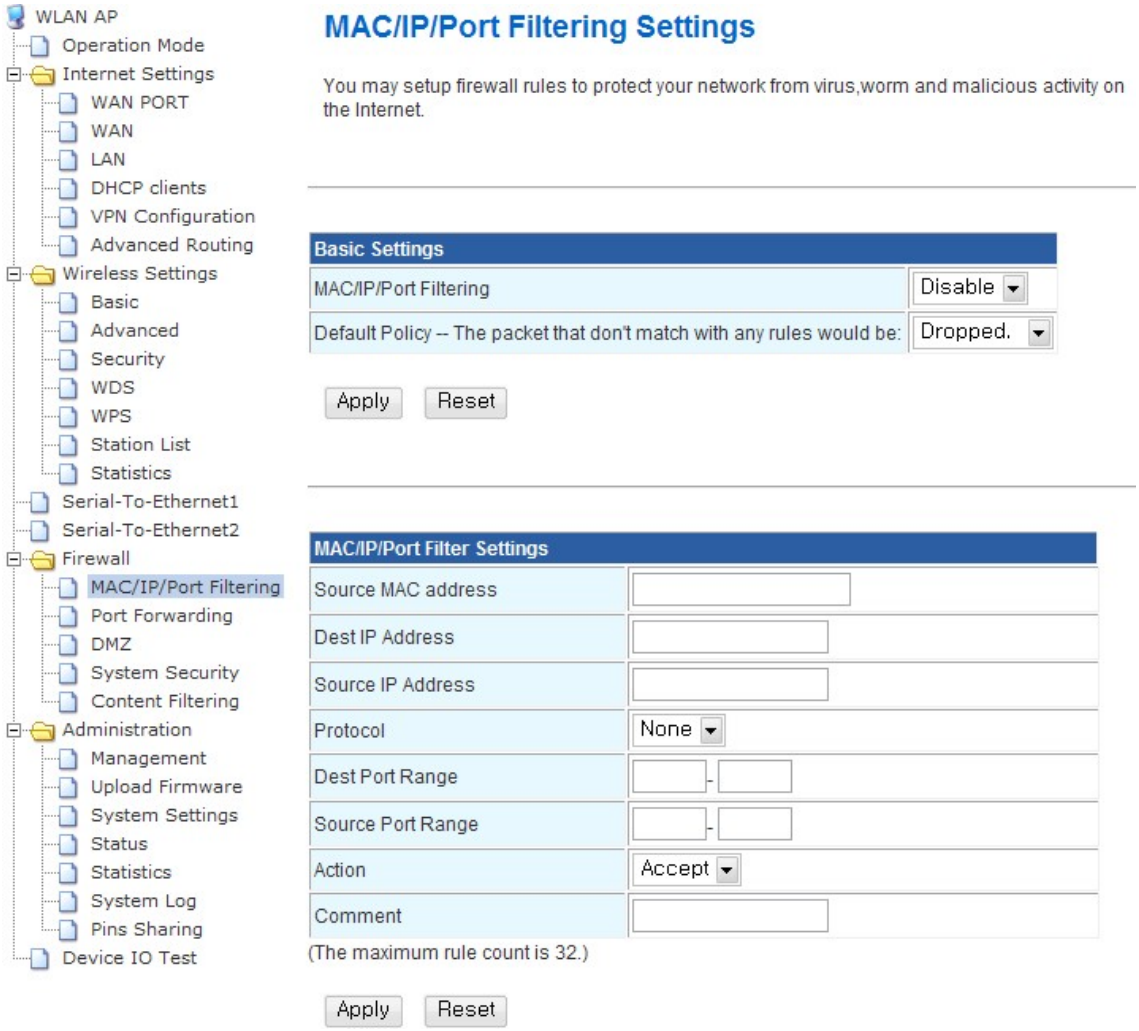
Menu	Description
IP Address	IP address of Internal Server or PC in the network where application is installed.
Service Port	Configure the range of the port to be assigned to internal server or PC will use.

Protocol	Select the protocol type (TCP or UDP)
Internal Port	Configure the port number of application on internal server or PC

3.5.2 MAC / IP / Port Filtering

-. It allows or blocks the Internet connection according to IP address or MAC address

-. To use this function, you have to configure "Default Policy – The packet that don't match with any rules would be:"

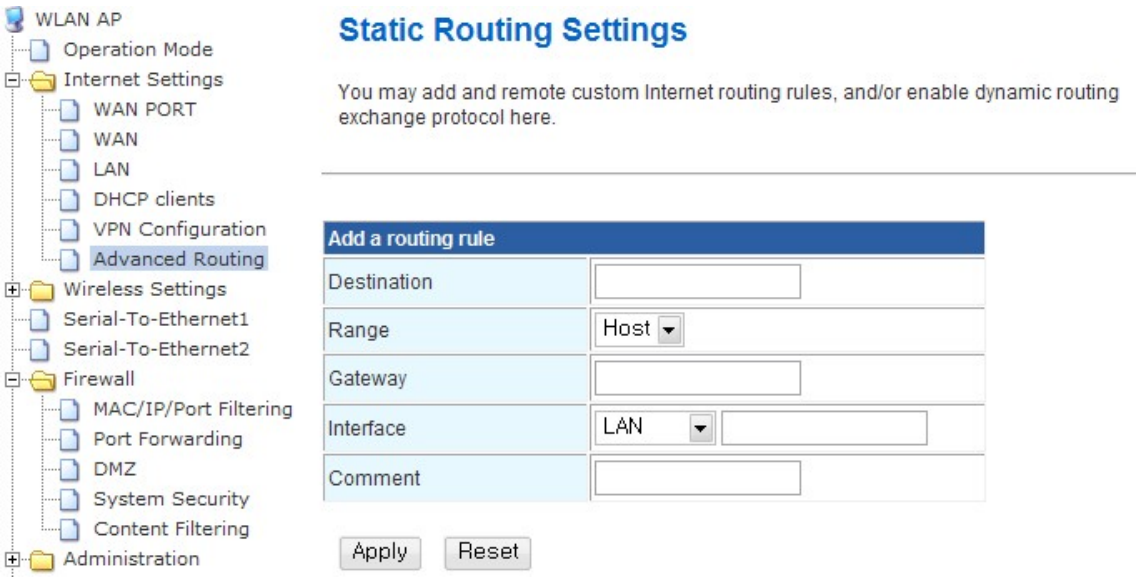


Menu	Description
MAC Address	Configure MAC Address to allow or block the connection
Dest IP Address	Configure the Destination IP address
Source IP Address	Configure the source IP address

Protocol	Select TCP, UDP or ICMP
Dest Port Range	Configure destination port number
Source Port Range	Configure the source port number
Action	Select "Accept" or "Deny" the new rule.

3.5.3 Routing Table Management

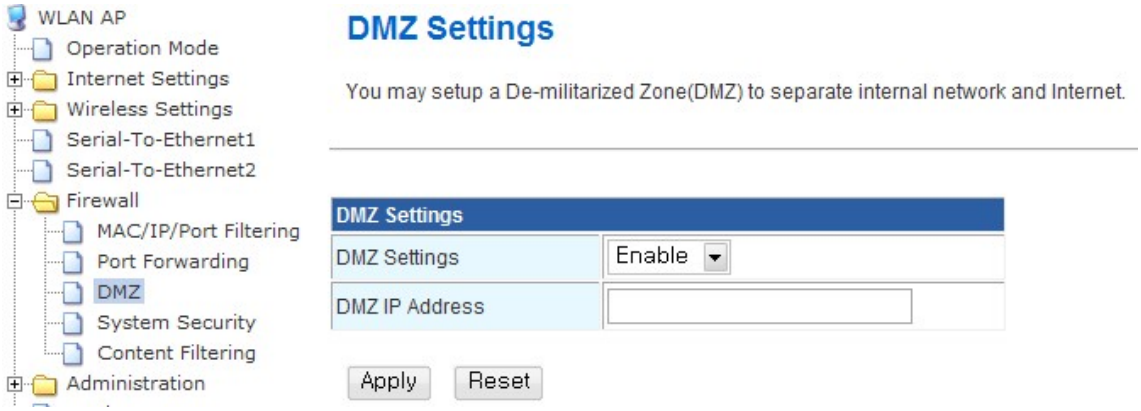
-. You can manually input the routing table.



Menu	Description
Destination	Input the target IP or network IP address of routing table
Range	Configure the Host or Network for routing table
Netmask	Configure the subnet mask when the range is configured as network
Gateway	Configure the gateway address at the Target mode.
Interface	Configure the Target as LAN or WAN

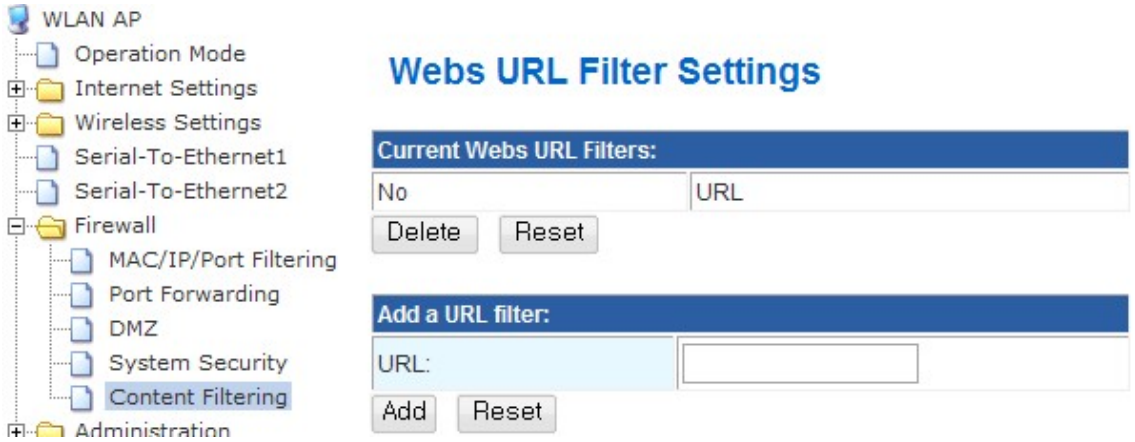
3.5.4 DMZ

-. It opens the ports which are not used for port forwarding to the PCs having specified IP address. With this function, you can solve the problem of Internet connection in the application of which port is not known.



3.5.5 URL Filtering

-. It is used when you want to block the connection from the specified site.



-. Input the characters. The url including the characters are blocked. For example, if you input "game", the sites such as www.game.com, or www.game.co.kr are blocked.

3.5.6 Host Filtering

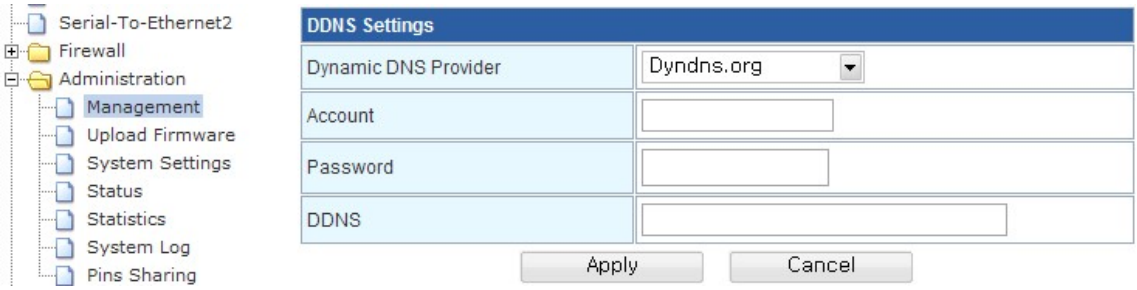
-. All sites having the input characters are blocked. For example, if you input "game", the sites such as www.hangame.com or www.hangame.co.kr are blocked.

3.5.7 DDNS Configuration

-. By assigning the domain name to the dynamic IP address, you can use as fixed IP address. If you use the DDNS, you can operate the server without checking the IP address to be assigned to WIZ620wi.

-. WIZ620wi supports "DynDNS", "freeDNS", "zoneedit" and "no-ip".

-. In order to use DynDNS, please register user ID and domain in the www.dyndns.org page and configure WIZ620wi. For using other sites of freeDNS, zoneedit or no-ip, please connect to freedns.afraid.org, www.zoneedit.com or www.no-ip.com and register user name and domain.

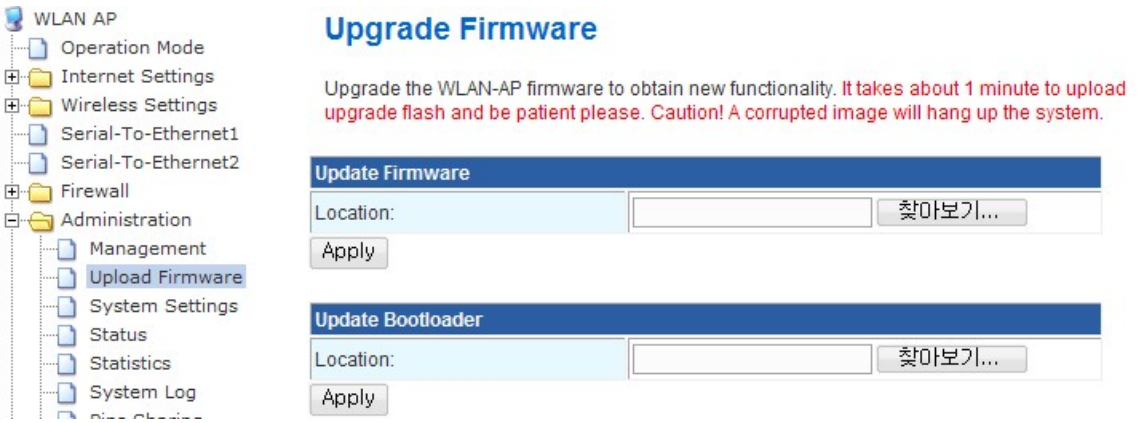


Menu	Description
DDNS Provider	Select the service provider (DynDNS, freeDNS, zoneedit, no-ip)
Account	Input the user account for DDNS service
Password	Input the password for DDNS service.
DDNS	Configure the host name to be used for DDNS service

3.6 System Management

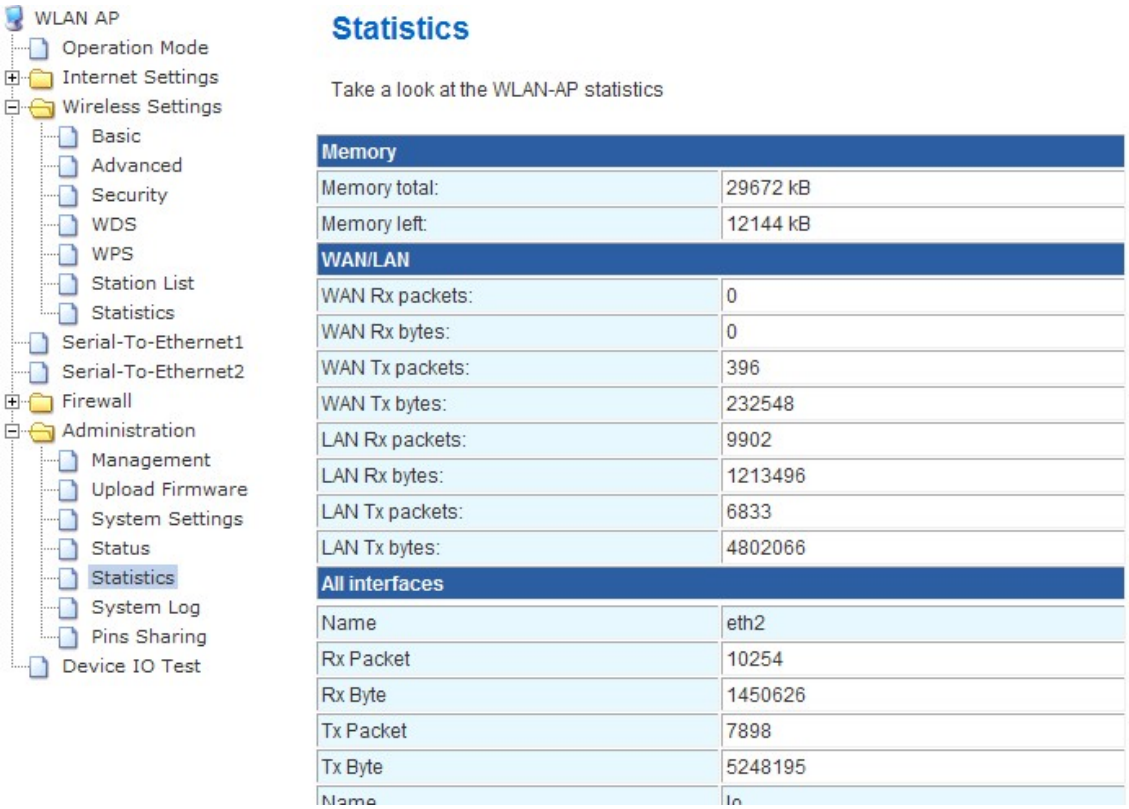
3.6.1 Firmware Upgrade

-. Upgrade the WIZ620wi with the latest firmware or Bootloader.



3.6.2 Statistic

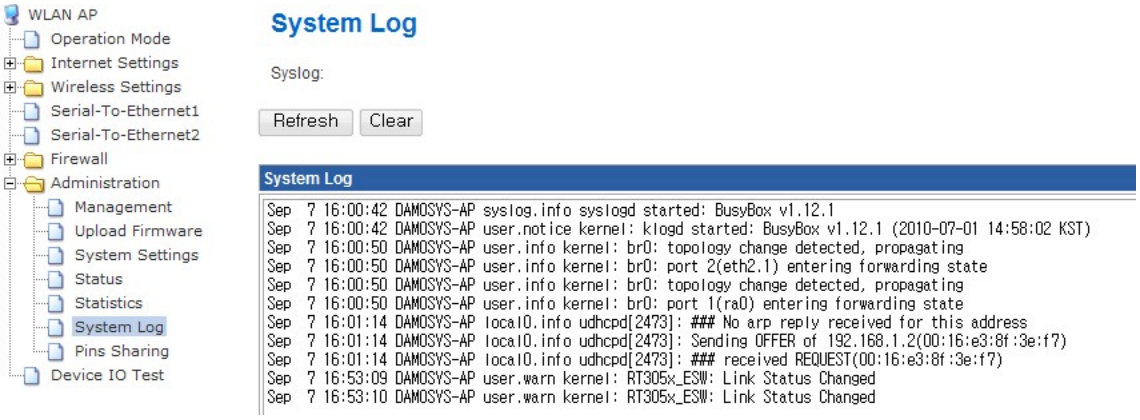
-. It provides Statistic data according to the interfaces.



3.6.3 System Log

-. You can check the operation status of WIZ620wi

-. If the log data exceeds 8Kbyte, the oldest log data is deleted, and latest one is added.


WLAN AP
Operation Mode
Internet Settings
Wireless Settings
Serial-To-Ethernet1
Serial-To-Ethernet2
Firewall
Administration
Management
Upload Firmware
System Settings
Status
Statistics
System Log
Pins Sharing
Device IO Test
System Log
Syslog:
Refresh
Clear
System Log
Sep 7 16:00:42 DAMOSYS-AP syslog.info syslogd started: BusyBox v1.12.1
Sep 7 16:00:42 DAMOSYS-AP user.notice kernel: klogd started: BusyBox v1.12.1 (2010-07-01 14:58:02 KST)
Sep 7 16:00:50 DAMOSYS-AP user.info kernel: br0: topology change detected, propagating
Sep 7 16:00:50 DAMOSYS-AP user.info kernel: br0: port 2(eth2.1) entering forwarding state
Sep 7 16:00:50 DAMOSYS-AP user.info kernel: br0: topology change detected, propagating
Sep 7 16:00:50 DAMOSYS-AP user.info kernel: br0: port 1(ra0) entering forwarding state
Sep 7 16:01:14 DAMOSYS-AP local0.info udhcpd[2473]: ### No arp reply received for this address
Sep 7 16:01:14 DAMOSYS-AP local0.info udhcpd[2473]: Sending OFFER of 192.168.1.2(00:16:e3:8f:3e:f7)
Sep 7 16:01:14 DAMOSYS-AP local0.info udhcpd[2473]: ### received REQUEST(00:16:e3:8f:3e:f7)
Sep 7 16:53:09 DAMOSYS-AP user.warn kernel: RT305x_ESW: Link Status Changed
Sep 7 16:53:10 DAMOSYS-AP user.warn kernel: RT305x_ESW: Link Status Changed

3.6.4 Administrator Configuration

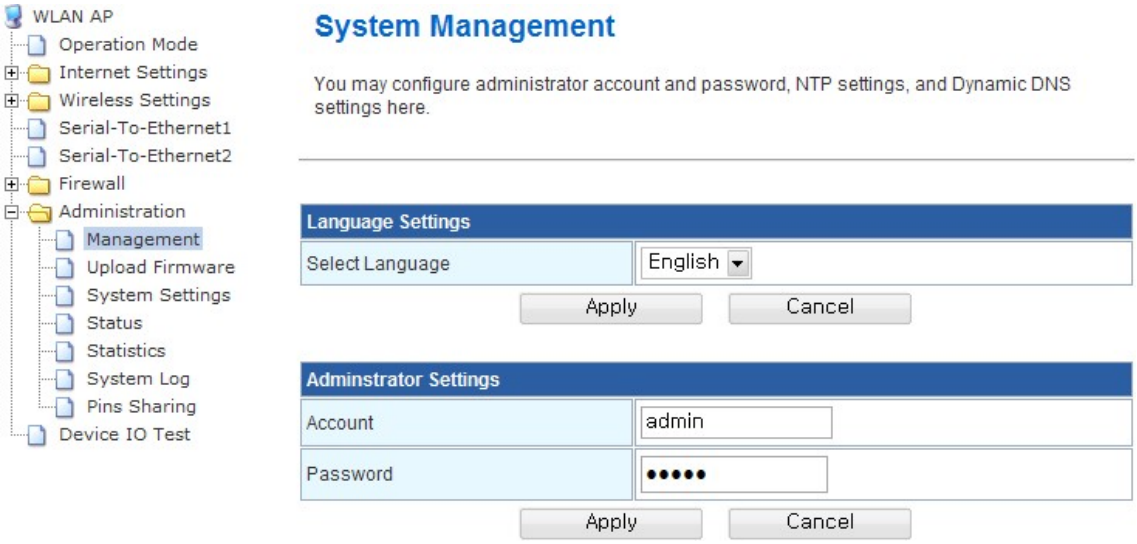
-. You can select English or Korean for WIZ620wi web page.

-. The default language is set as English.

-. You can configure administrator's account and password for web server connection.

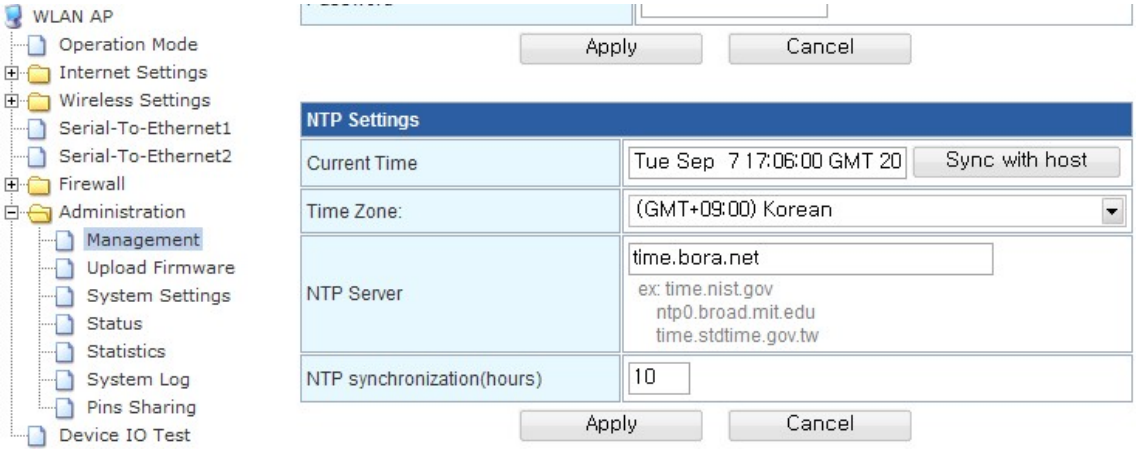
-. The default account and password are "admin"

-. If you forget the account or password, you can reset to factory default by using reset button.



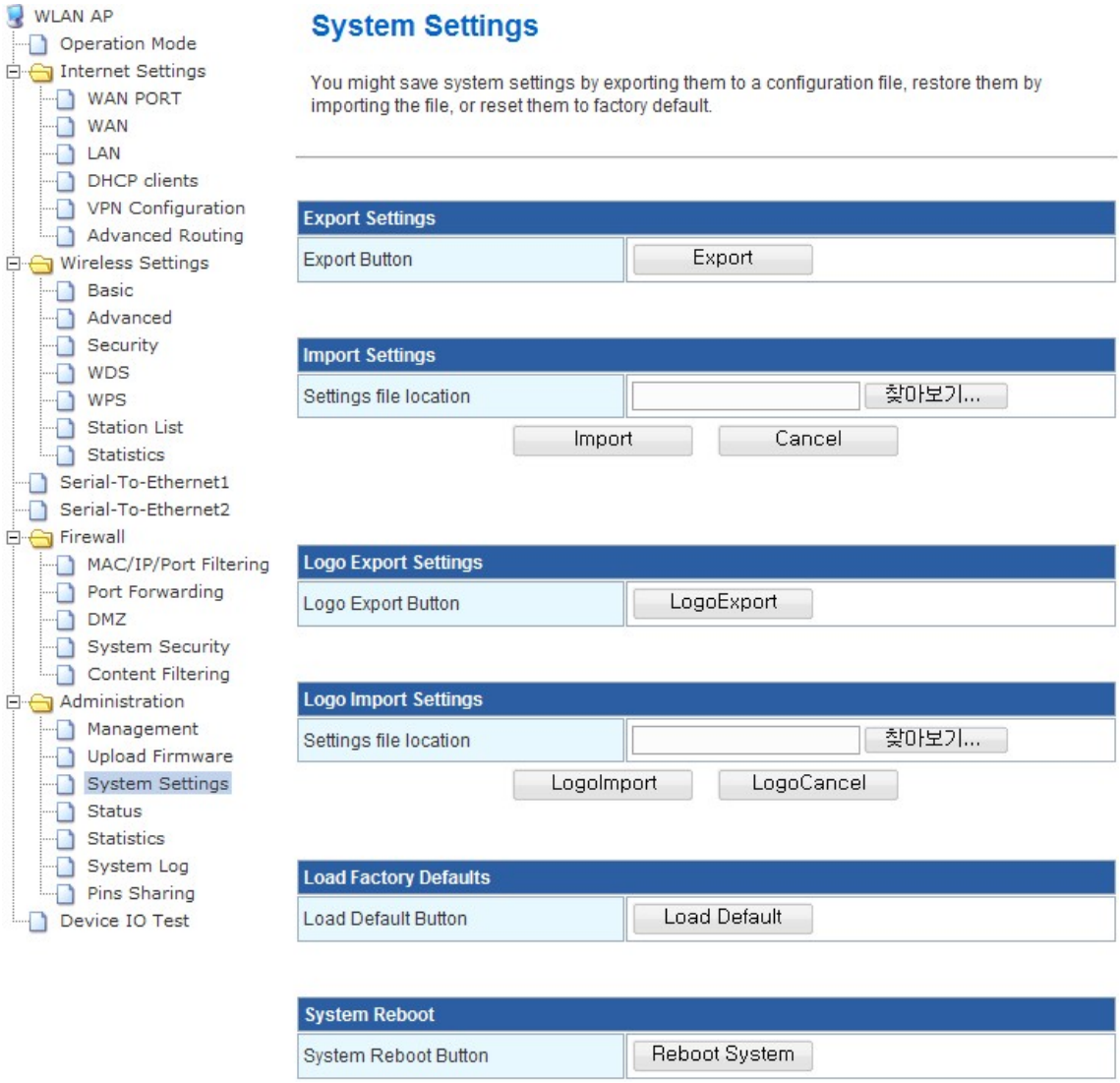
3.6.5 System Time Configuration

-. You can configure NTP server and Time zone when WIZ620wi connects to the Internet and acquired system time information.



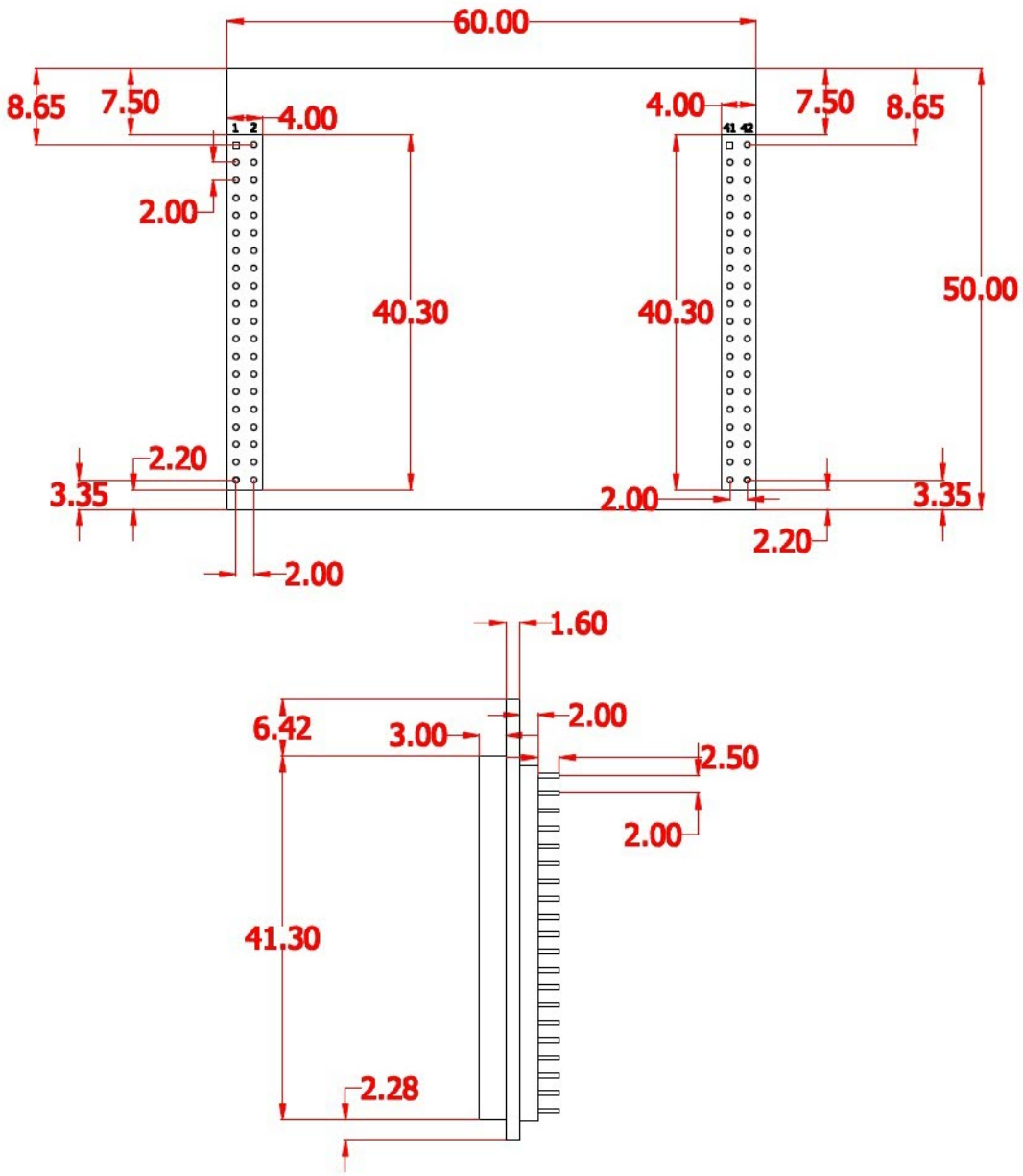
3.6.6 Configuration Back-up / Recovery

-. You can save the configuration value in the PC, or apply the configuration file to WIZ620wi. You can also restore all configuration values to the factory default.



4. Module dimension & Pin assignment

4.1 WIZ620wi module dimension



4.1 WIZ620wi module pin assignment

No	Name	Shared	Description
1	DTR1	-	UART1 : DTR
2	DCD1	-	UART1 : DCD
3	RXD1	-	UART1 : RXD
4	CTS1	-	UART1 : CTS
5	TXD1	-	UART1 : TXD
6	GND	-	GND
7	TXD2	-	UART2 : TXD
8	RXD2	-	UART2 : RXD
9	RI1	-	UART1 : RI
10	GND	-	GND
11	3.3V	-	VCC 3.3V Input
12	3.3V	-	VCC 3.3V Input
13	RTS1	-	UART1 : RTS
14	DSR1	-	UART1 : DSR
15	nWLAN_LED	-	Wireless init : ON / Active data : Blinking
16	GE_MDC	-	PHY Management Clock
17	VBUS	-	USB OTG VBUS pin Connect VBUS pin of the USB connector
18	GE_MDIO	-	PHY Management Data
19	PADP	-	USB OTG data pin Data+
20	PADM	-	USB OTG data pin Data-
21	GE_RXDV	-	RGMII/MII RX Data Valid
22	GE_RXCLK	-	RGMII/MII RX Clock
23	GE_RXD2	-	RGMII/MII RX Data bit 2
24	GE_RXD0	-	RGMII/MII RX Data bit 0
25	GE_RXD1	-	RGMII/MII RX Data bit 1
26	GE_RXD3	-	RGMII/MII RX Data bit 3
27	GND	-	GND

28	GND	-	GND
29	GE_TXCLK	-	RGMII/MII TX Clock
30	GE_TXEN	-	RGMII/MII TX Data Enable
31	GE_TXD3	-	RGMII/MII TX Data bit 3
32	GE_TXD2	-	RGMII/MII TX Data bit 2
33	GE_TXD0	-	RGMII/MII TX Data bit 0
34	GE_TXD1	-	RGMII/MII TX Data bit 1
35	GND	-	GND
36	nACT_LED1	-	LAN port 1 Active LED
37	nACT_LED0	-	LAN port 0 Active LED
38	nACT_LED3	-	LAN port 3 Active LED
39	nACT_LED2	-	LAN port 2 Active LED
40	nACT_LED4	-	LAN port 4 Active LED

No	Name	Shared	Description
41	RGMII_MII_MODE_0	MA16	Reserved
42	RGMII_MII_MODE_1	MA17	Reserved
43	EJTAG-TDO	GPIO17	nRESET (GPIO17) Active Low. If this signal asserted more than 3 sec, factory reset performed.
44	EJTAG-TMS	GPIO19	UART1 Hardware Trigger (GPIO19) Low : Entering serial command mode High : Exit serial command mode
45	EJTAG-TCK	GPIO20	nWPS_LED (GPIO20)
46	SPI_CLK	GPIO4	UART1 Tx/Rx LED (GPIO4)
47	SPI_DIN	GPIO6	UART2 Tx/Rx LED (GPIO6)
48	SPI_EN	GPIO3	GPIO3
49	SPI_DOUT	GPIO5	GPIO5
50	GPIO0		nWPS_EN (GPIO0)
51	I2C_SCLK	GPIO2	UART2 Hardware Trigger (GPIO2)

			Low : Entering serial command mode High : Exit serial command mode
52	I2C_SD	GPIO1	nRUN_LED (GPIO1)
53	TXOP4		10/100 PHY Port 4 TXP
54	TXOM4		10/100 PHY Port 4 TXN
55	RXIP4		10/100 PHY Port 4 RXP
56	RXIM4		10/100 PHY Port 4 RXN
57	1.5V		VCC 1.5V Input
58	1.5V		VCC 1.5V Input
59	TXOM3		10/100 PHY Port 3 TXN
60	RXIM3		10/100 PHY Port 3 RXN
61	TXOP3		10/100 PHY Port 3 TXP
62	RXIP3		10/100 PHY Port 3 RXP
63	GND		GND
64	GND		GND
65	TXOP2		10/100 PHY Port 2 TXP
66	TXOM2		10/100 PHY Port 2 TXN
67	RXIP2		10/100 PHY Port 2 RXP
68	RXIM2		10/100 PHY Port 2 RXN
69	GND		GND
70	GND		GND
71	TXOP1		10/100 PHY Port 1 TXP
72	TXOM1		10/100 PHY Port 1 TXN
73	RXIP1		10/100 PHY Port 1 RXP
74	RXIM1		10/100 PHY Port 1 RXN
75	3.3V		VCC 3.3V Input
76	3.3V		VCC 3.3V Input
77	TXOP0		10/100 PHY Port 0 TXP
78	TXOM0		10/100 PHY Port 0 TXN
79	RXIP0		10/100 PHY Port 0 RXP
80	RXIM0		10/100 PHY Port 0 RXN

5. Serial Configuration

-. By using serial command, you can configure WIZ620wi.

-. By using "Serial Command Mode" Strap, you can enter into the serial command mode.

-. If there is "_" in the string input data such as SSID or PSK, convert it into "__" before transmission.

5.1 Command Frame Format

Pin number 4 of WIZ620wi is Hardware trigger pin.('1': H/W trigger disable, '0': enable)
Or you can use h/w trigger switch of WIZ620wi EVB board

< Frame Format >

Command Frame format

Descriptor	STX	Command code	Parameter	ETX
Length(bytes)	1	2	Variable	1

Reply Frame format

Descriptor	STX	Reply code	Parameter	ETX
Length(bytes)	1	2	Variable	1

STX & ETX

Setting	Comments
STX	'<' : Hex = 3Ch
ETX	'>' : Hex = 3Eh

Reply Code

Reply	Comments
S	Command was successful
F	Command failed
0	Invalid STX
1	Not existing command
2	Invalid parameter
3	Invalid ETX
4	Not supported command
5	Not able to add. WDS - 4, ACL - 16

Command Code

Command	Get/Set	Comments	Parameter
NETWORK			
RF	Get	Firmware Version	vx.x.x
RA	Get	MAC Address	0:Ethernet MAC address(LAN), 1:Wireless MAC address, 2:Ethernet MAC address(WAN) <0xx.xx.xx.xx.xx.xx_1xx.xx.xx.xx.xx.xx_2xx.xx.xx.xx.xx.xx>
RI	Get	IP Address	<Sxxx.xxx.xxx.xxx>
WI	Set	IP Address	<xxx.xxx.xxx.xxx>
RS	Get	Subnet Mask	<Sxxx.xxx.xxx.xxx>
WS	Set	Subnet Mask	<xxx.xxx.xxx.xxx>
RG	Get	Gateway	<Sxxx.xxx.xxx.xxx>
WG	Set	Gateway	<xxx.xxx.xxx.xxx>
RD	Get	DHCP Server	1:Enable, 0:Disable <Sx>
WD	Set	DHCP Server	1:Enable, 0:Disable <x>

RH	Get	DHCP Start/End IP	Start address_End address <Sxxx.xxx.xxx.xxx_xxx.xxx.xxx.xxx>
WH	Set	DHCP Start/End IP	Start address_End address <xxx.xxx.xxx.xxx_xxx.xxx.xxx.xxx>
DL	Get	Wireless Active Client List	MAC Address_MCS_BW_SGI_RSSI0_RSSI1_RSSI2 MCS: 0-15, BW:0(20M), 1(40M), SGI(Short GI) <Sxxxxxxxxxxxx_xx_xx_xx[:xxxxxxxxxxxx_xx_xx_xx:...]>
RL	Get	DHCP Client List	<IP address_MAC address> <Sxxx.xxx.xxx.xxx_xxxxxxxxxxxx[:xxx.xxx.xxx.xxx_xxxxxxxxxxxx:...]>
WV	Set	DNS Server	1:Manual, 0:Auto <1:xxx.xxx.xxx.xxx[_xx.xx.xx.xx]> or<0>
RV	Get	DNS Server	1:Manual, 0:Auto_DNS Server IP address <Sx_xxx.xxx.xxx.xxx[_xx.xx.xx.xx]>
RT	Get	WAN Port	0:Static, 1:DHCP Client, 2:PPPoE -Static: 0_Ipaddress_Subnet_Gateway_DNS <S0_xxx.xxx.xxx.xxx_xxx.xxx.xxx.xxx_xxx.xxx.xxx.xxx_xxx.xxx.xxx> -DHCP Client: 1_IPaddress_Subnet_Gateway <S1_xxx.xxx.xxx.xxx_xxx.xxx.xxx.xxx_xxx.xxx.xxx.xxx> PPPoE: 2_UserName_Password <S2_User Name_Password> -PPTP: 3_IP_Subnet_Gateway_ServerIP_UserName_ Password <S3_xxx.xxx.xxx.xxx_xxx.xxx.xxx.xxx_xxx.xxx.xxx.xxx_xxx.xxx.xxx_UserName_Password>
WT	Set	WAN Port	0:Static, 1:DHCP Client, 2:PPPoE -Static: 0_Ipaddress_Subnet_Gateway_DNS <0_xxx.xxx.xxx.xxx_xxx.xxx.xxx.xxx_xxx.xxx.xxx.xxx_xxx.xxx.xxx.xxx> -DHCP Client: 1 <1> PPPoE: 2_UserName_Password <2_User Name_Password> -PPTP: 3_IP_Subnet_Gateway_ServerIP_UserName_ Password

			<3_xxx.xxx.xxx.xxx_xxx.xxx.xxx.xxx_xxx.xxx.xxx.xxx_xxx.xxx.xxx.xxx_UserName_Password>
RC	Get	Connection Status	0: Not Connect, 1:Connect <Sx>
WC	Set	TCP Connection Close	<WC>
WIRELESS			
DB	Get	Wireless Band	0: 11b+g, 2: 11b, 3:11g, 6: n, 9:b+g+n <Sx>
GB	Set	Wireless Band	0: 11b+g, 2: 11b, 3:11g, 6: n, 9:b+g+n <x>
DO	Get	Operation Mode	0:AP, 1:Gateway, 3:Station(Ethernet-Converter) <Sx>
GO	Set	Operation Mode	0:AP, 1:Gateway, 3:Station(Ethernet-Converter) <x>
DS	Get	SSID	1~32 chars <Sxxxx~>
GS	Set	SSID	1~32 chars <xxxx~>
DC	Get	Channel	Auto_0, 1~13 <Sx>
GC	Set	Channel	Auto_0, 1~13 <x>
DW	Get	WDS	3:disable,5:bridge,6:repeater,7:Lazy_count_MACaddress_Comment[_MACaddress_Comment_...] <Sx_x_xxxxxxxxxxx_xxx~>
GW	Set	WDS	3:disable,5:bridge,6:repeater,7:Lazy_1:add, 2:delete_count_MACaddress[_MACaddress_..] <x_x_x_xxxxxxxxxxx_xxx~>
DP	Get	Tx Power	1-100: power(%) <Sxx>
GP	Set	Tx Power	1-100: power(%) <xx>
DR	Get	Data Rate	<Sxx>
GR	Set	Data Rate	<xx>

DH	Get	Broadcast SSID	0:Enable, 1:Disable <Sx>
GH	Set	Broadcast SSID	0:Enable, 1:Disable <x>
DM	Get	WMM	1:Enable, 0:Disable <Sx>
GM	Set	WMM	1:Enable, 0:Disable <x>
DA	Get	MAC Access Control	0:Disable,1:AllowListed,2:DenyListed[_count[_MACaddress]] <Sx_x_xxxxxxxxxxxx_xxx~>
GA	Set	MAC Access Control	0:Disable,1:AllowListed,2:DenyListed[_1:add,2:delete_count_MACaddress] <x_x_x_xxxxxxxxxxxx_xxx~>
DI	Get	Site Survey	SSID_BSSID_Channel_RSSI_Security_wlanMode If the SSID is " ", the AP of the peer is hidden status. <Sxxxx_xxxxxxxxxxxx_xx_xx_x>
GI	Set	Connection AP	To use <GI>command, perform the <DI> command for site survey. Connect to the SSID searched by site survey. If the authentication is WEP and default keyId is not "1", the connection is not allowed. In this time, the connection should be done using <GU> command. SSID: SSID of AP Key: Encrypting Key of AP <ssid_key>
DT	Get	WPS	0:disable, 1:enable[_status_pin value] <Sx_x_x>
GT	Set	WPS	0:disable, 1:enable[_1:pin, 2:pbc[_pin value]] <x_x_x>
QP	Get	Module Status Checking	connection status_SSID_BSSID_CHAN_RATE_RSSI Conn_status: '0' is not connected, '1' is connected. <Sx_xxxx_xxxxxxxxxxxx_xx_xxM_xx>
SECURITY			

DU	Get	Security Status	AuthMode_Encrypt[_DefaultKey_KeyLength_KeyFormat _KeyValue_radiusPasswd_radiusIP_radiusPort] AuthMode: 1(Open), 2(802.1x), 3(Shared), 4(WPA), 5(WPA-PSK), 6(WPA2), 7(WPA2-PSK), 8(WEPAUTO), 9(WPA1WPA2), a(WPAPSKWPA2PSK) Encrypt: 0(None),1 (WEP), 2(TKIP), 3(AES), 4(TKIP_AES) DefaultKey: 1 -4 KeyLength: 0(None), 1(WEP64), 2(WEP128) KeyFormat(WEP): 0(Ascii), 1(Hex) KeyFormat(WPA-PSK): 0(Passphrase), 1(Hex) <Sx_x_x_x_x_x_x>
GU	Set	Security Control	AuthMode_Encrypt[_DefaultKey_KeyLength_KeyFormat _KeyValue_radiusPasswd_radiusIP_radiusPort] AuthMode: 1(Open), 2(802.1x), 3(Shared), 4(WPA), 5(WPA-PSK), 6(WPA2), 7(WPA2-PSK), 8(WEPAUTO), 9(WPA1WPA2), a(WPAPSKWPA2PSK) If the operation mode is station (Ethernet-Converter), 2, 4, 6 are not supported. Encrypt: 0(None),1 (WEP), 2(TKIP), 3(AES), 4(TKIP_AES) DefaultKey: 1 - 4 KeyLength: 0(None), 1(WEP64), 2(WEP128) KeyFormat(WEP): 0(Ascii), 1(Hex) KeyFormat(WPA-PSK): 0(Passphrase), 1(Hex) <x_x_x_x_x_x_x>
SERIAL			
RK	Get	Protocol	TCP_0, UDP_1 <Sx>
WK	Set	Protocol	TCP_0, UDP_1 <x>
RM	Get	Mode	0:Client, 1:Mixed, 2:Server <Sx>
WM	Set	Mode	0:Client, 1:Mixed, 2:Server <x>
RX	Get	Server IP	Server IP address <Sxxx.xxx.xxx.xxx>

WX	Set	Server IP	Server IP address <xxx.xxx.xxx.xxx>
RP	Get	Port	0~65535 <Sxxxxx>
WP	Set	Port	0~65535 <xxxxx>
RB	Get	Baudrate_DataBit_Parity_Flow_Stopbits	eg. [Baudrate]1: 115200, 2: 57600, 3: 38400, 4: 19200, 5: 9600, 6: 4800, 7: 2400,8: 1200 [data byte] 7: 7bit, 8bit [parity] 0: no parity, 1: Odd, 2: Even [Flow] 0: no, 1: Xon/Xoff, 2: RTS/CTS [Stopbits]; 1: 1stop, 2:2stop <Sxxxxx>
WB	Set	Baudrate_DataBit_Parity_Flow_Stopbits	eg. [Baudrate]1: 115200, 2: 57600, 3: 38400, 4: 19200, 5: 9600, 6: 4800, 7: 2400,8: 1200 [data byte] 7: 7bit, 8bit [parity] 0: no parity, 1: Odd, 2: Even [Flow] 0: no, 1: Xon/Xoff, 2: RTS/CTS [Stopbits]; 1: 1stop, 2:2stop <xxxxx>
RW	Get	Domain Name	<Sstrings>, Support Max. 64 characters
WW	Set	Domain Name	<strings>, Support Max. 64 characters
QT	Get	Time	0~65535 <Sxxxxx>
OT	Set	Time	0~65535 <xxxxx>
QS	Get	Size	0~255 <Sxxx>
OS	Set	Size	0~255 <Sxxx>
QC	Get	Char	00~ff <Sxx>
OC	Set	Char	00~ff <xx>

QI	Get	Inactivity Time	00~60 <Sxx>
OI	Set	Inactivity Time	00~60 <xx>
QU	Get	TCP Connection Option	0-1 0: Try the "TCP connection" at the TCP Client mode regardless of serial data input 1: Try the TCP connection" at the TCP Client mode when serial data is received <Sx>
OU	Set	TCP Connection Option	0-1 0: Try the "TCP connection" at the TCP Client mode regardless of serial data input 1: Try the TCP connection" at the TCP Client mode when serial data is received <Sx>
RU	Get	Get Aux Port	Enable[_Protocol_Mode_ServerIP or Domain_ServerPort] Enable: 0(Disable), 1(Enable), If Disable is set, data can be omitted. Protocol: 0(UDP), 1(TCP) Mode: 0(Server), 1(Client) ServerIP: a.b.c.d format Domain: xxx.yyy.zzz ServerPort: 0-65535 <Sx_x_x_a.b.c.d_x>
WU	Set	Set Aux Port	Enable[_Protocol_Mode_ServerIP or Domain_ServerPort] Enable: 0(Disable), 1(Enable), If Disable is set, data can be omitted. Protocol: 0(UDP), 1(TCP) Mode: 0(Server), 1(Client) ServerIP: a.b.c.d format Domain: xxx.yyy.zzz ServerPort: 0-65535 <x_x_x_a.b.c.d_x>

RE	Get	Get Data Flow	0-2 0: Transmit serial data to main and aux port. default value 1: Transmit serial data only to main port 2: Transmit serial data only to aux port <Sx>
WE	Set	Set Data Flow	0-2 0: Transmit serial data to main and aux port, default value 1: Transmit serial data only to main port 2 : Transmit serial data only to aux port <x>
RZ	Get	Get Insert Tag	Enable(0-1)[_String1_String2] 0: disable, default value, String can be omitted. 1: enable String1, String2: It is available when Enable is set as "1". String1 is the string which is added when transmitted from main port to serial. String2 is the string which is added when transmitted from aux port to serial. It is composed of maximum 16 characters. <Sx_xxx_xxx>
WZ	Set	Set Insert Tag	Enable(0-1)[_String1_String2] 0: disable, default value, String can be omitted. 1: enable String1, String2: It is available when Enable is set as "1". String1 is the string which is added when transmitted from main port to serial. String2 is the string which is added when transmitted from aux port to serial. It is composed of maximum 16 characters. <Sx_xxx_xxx>
OTHERS			
WF	Set	Factory Default	<WF>
WR	Set	Restart	<WR>

6. Performance

Performance (up/down): Mbps

	1st Test	2nd Test	3rd Test
LAN-->LAN	94.099	93.978	94.087
LAN-->WAN	91.682	92.801	92.958
LAN-->WLAN	84.385	86.507	85.346
LAN<-->LAN	177.074(88.393/88.857)	177.489(88.394/89.324)	177.798(88.483/89.491)
LAN<-->WAN	120.570(60.631/60.092)	119.920(60.252/59.732)	122.075(61.466/60.702)
LAN<-->WLAN	101.121(50.922/50.443)	100.591(50.670/50.045)	99.871(50.223/49.811)
WAN-->LAN	93.81	94.006	93.919
WAN-->WLAN	71.396	72.725	72.748
WAN<-->LAN	120.570(60.631/60.092)	119.920(60.252/59.732)	122.075(61.466/60.702)
WAN<-->WLAN	80.216(35.036/45.332)	80.682(35.140/45.582)	80.542(34.807/45.771)
WLAN-->LAN	79.775	79.074	79.35
WLAN-->WAN	77.519	77.542	76.143
WLAN-->WLAN	37.755	36.824	37.797
WLAN<-->LAN	101.121(50.922/50.443)	100.591(50.670/50.045)	99.871(50.223/49.811)
WLAN<-->WAN	80.216(35.036/45.332)	80.682(35.140/45.582)	80.542(34.807/45.771)
WLAN<-->WLAN	38.048(19.141/19.027)	40.866(20.570/20.499)	40.552(20.414/20.248)

7. Demo & Test

This chapter shows the example how you can test the WIZ620wi.

The test environment is as below.

<Hardware>

- PC with RS-232 serial port
- WIZ620wi & WIZ620wi EVB
- LAN cable to connect PC and WIZ620wi (Direct or Cross Cable)
- Serial cable to connect PC's COM and WIZ620wi

<Software>

- Hyper Terminal (or other terminal program)

STEP 1

① Connect PC and WIZ620wi-EVB using serial cable.

② Connect PC and WIZ620wi-EVB using LAN cable.

③ Turn on the switch of WIZ620wi-EVB.

STEP2. (WIZ620wi Configuration)

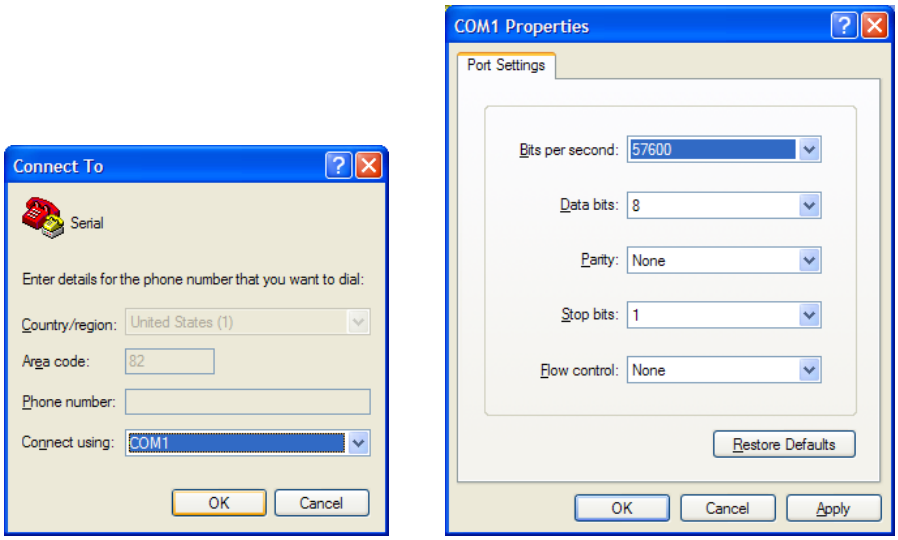
① Connect the PC to WIZ620wi (Network Setting -> Wireless Connection)

② At the Internet browser, input the IP address of WIZ620wi (default : 192.168.1.254). If the configuration page is displayed, input serial configuration value.

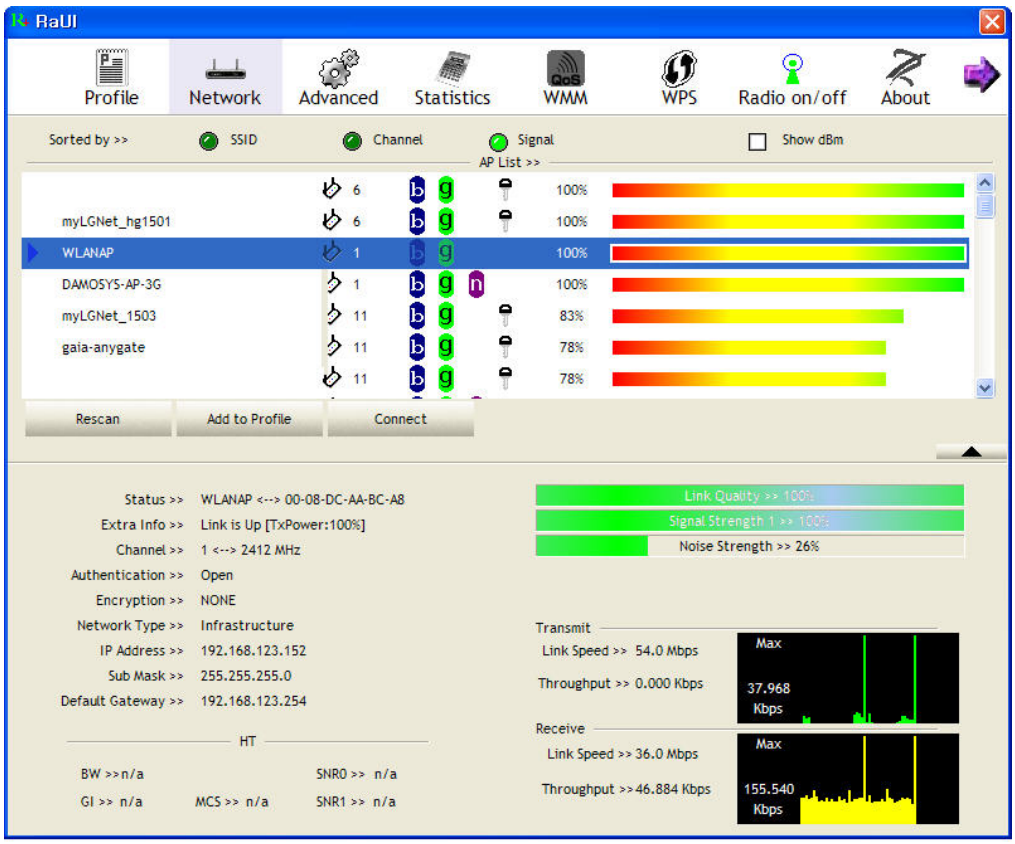
STEP3. (Data Transmission)

Execute the terminal program at the PC (Ex : Hyper terminal)

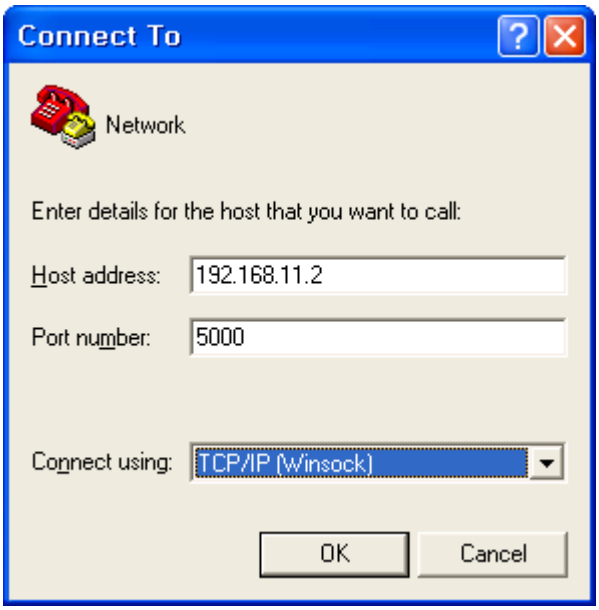
Set the baud rate with the same value of WIZ620wi.



At the PC, connect to "WKANAP" when SSID ofWIZ620wi is "WLANAP"

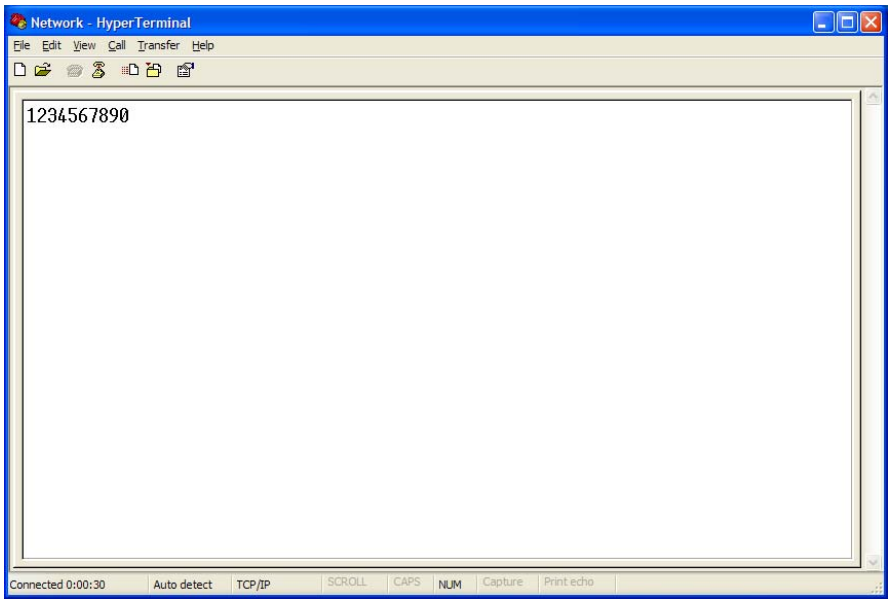


Execute another hyper terminal, and set the IP address and Port Number.



Input any character at the serial hyper terminal (below example inputs "01234567890")

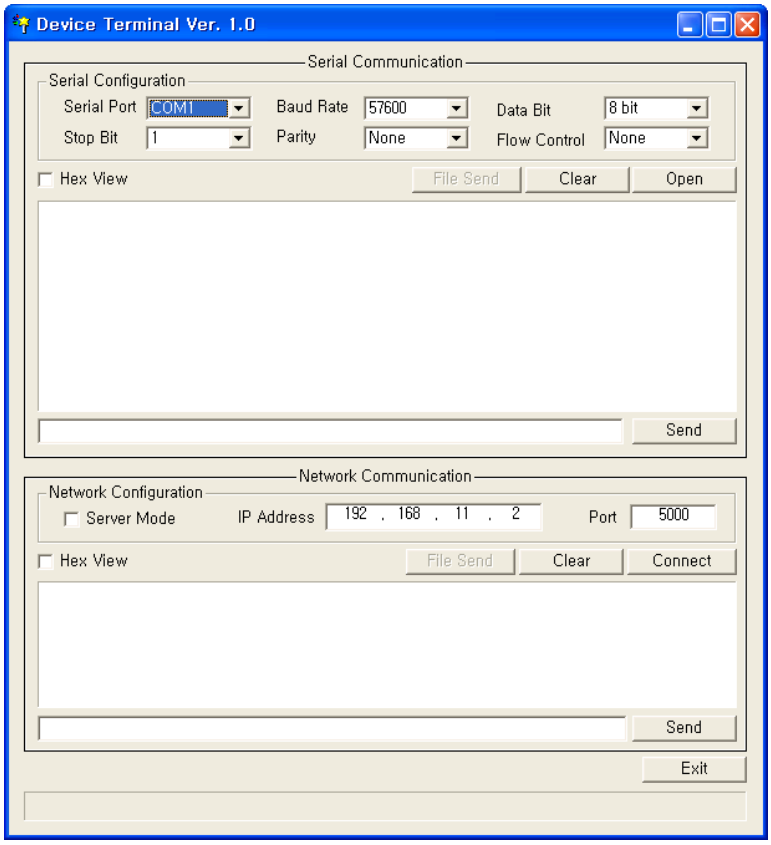
Check if you can see the same characters at the Network hyper terminal. (Serial to Ethernet)



In the same way, input any character in the network hyper terminal and check if the same characters are displayed in the serial hyper terminal. (Ethernet to Serial)

* Above function can be tested through Device Terminal Program that WIZnet is providing. The program is downloadable at the Library page of WIZnet homepage.

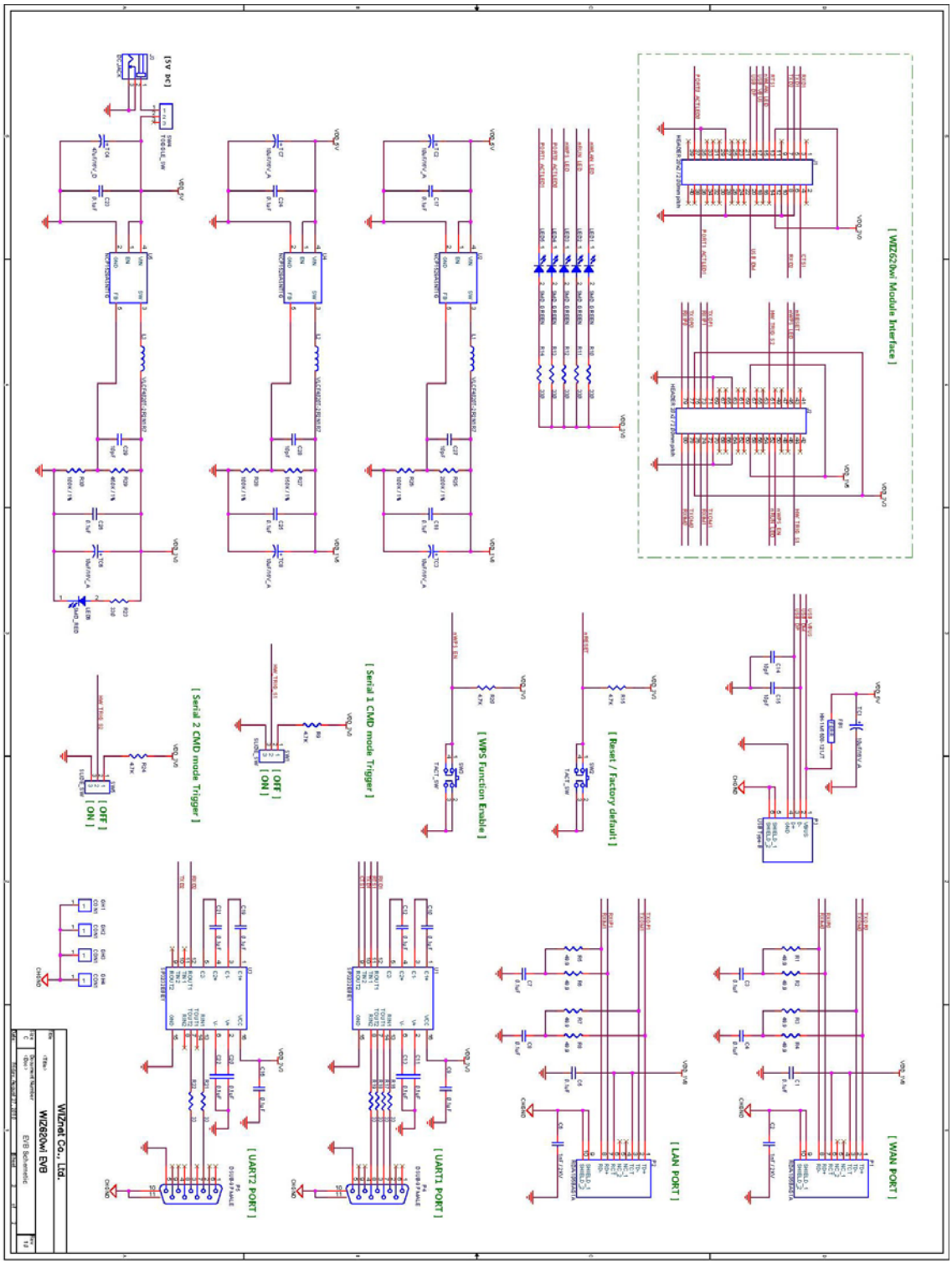
By using Device Terminal program, the data communication between serial and Ethernet can be easily and simply tested.



Device Terminal has been developed by integrating Serial and Network terminals. As shown in above figure, set the value for Serial communication according to WIZ620wi's configuration value and click open button, the serial communication is available.

By using Network terminal, you can test the TCP client mode and TCP server mode. When WIZ620wi operates as server mode, device terminal should be set as client. In this case do not check "server mode". In the IP address and port, input the IP address and port number of WIZ620wi. If you click the Connect button, the network communication is available. After establishing the connection between serial and network terminals, input any data in the a window and click the Send button. You can check the same data is displayed in another window.

8. Reference Schematics


[WIZ620wi Module Interface]
[Serial 2 CMD mode Trigger]
[Serial 1 CMD mode Trigger]
[WPS Function Enable]
[Reset / Factory default]
[UART2 PORT]
[UART1 PORT]
[LAN PORT]
[WAN PORT]
WIZnet Co., Ltd.
WIZ620wi EVB